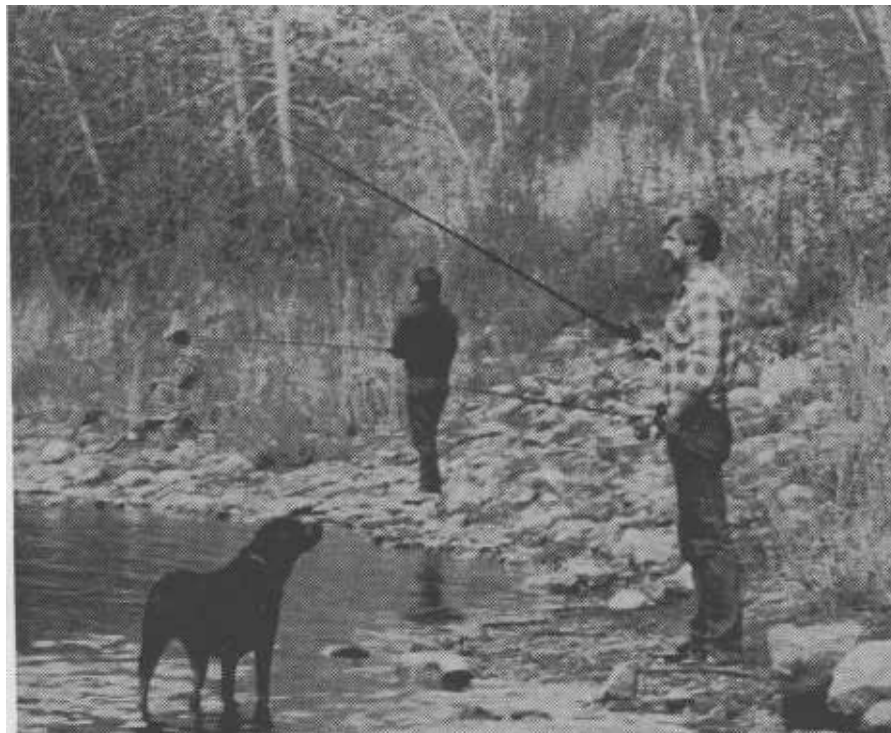


**EVALUATION OF THE HATCHERY-WILD COMPOSITION  
OF IDAHO SALMON AND STEELHEAD HARVEST**

**October 1, 1993 to December 31, 1994.**



**By:**

**Kent Ball, Senior Fishery Research Biologist**

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## ABSTRACT

Steelhead trout *Oncorhynchus mykiss* and chinook salmon *O. tshawytscha* fisheries in Idaho are monitored to assess hatchery contribution, distribution, and return rates. Coded wire tags (CWT's) are retrieved from fish harvested by anglers, and harvest rates are calculated by month and river section.

During the fall 1993 and spring 1994 steelhead seasons, 20,504 anglers were interviewed and 2,343 adult steelhead examined, which was 7.3% of the total steelhead harvest. We retrieved 195 CWT's from 69 different mark groups. The total estimated harvest for the 1993-94 season was 31,967 hatchery and 4 wild-natural fish, of which an estimated 5,811 (18%) were produced by the Lower Snake River Compensation Plan (LSRCP). An additional 1,723 LSRCP-reared fish returned to hatchery racks or to off-site release locations.

The estimated total return of A-strain adults from 1,344,499 smolts released at Sawtooth Hatchery in 1991 was 6,285 (0.47%), and 80% of the return was harvested. An estimated 2,350 (0.16%) B-strain adults returned after two ocean-years from 1,508,533 smolts released into the East Fork Salmon River in 1991; this group was harvested at 95%. Returns from the 1990 release of 988,350 smolts into the East Fork Salmon River totalled an estimated 1,048 adults, of which 88% were harvested.

Progeny of East Fork parents returned twice as many adults to the Idaho fishery and 5.8 times as many to the hatchery rack than progeny of Dworshak parents when released into the East Fork Salmon River.

We surveyed 31 tributaries in the upper Salmon River drainage during spring 1994 to document the occurrence and distribution of adult hatchery steelhead. Sixteen streams that contained adult spawning steelhead were electrofished. We handled 224 adult steelhead, of which 16 were wild/natural. Coded wire tags were retrieved from 38 hatchery fish.

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## INTRODUCTION

Chinook salmon *Oncorhynchus tshawytscha* and steelhead trout *O. mykiss* are raised in Idaho hatcheries to mitigate for losses caused by the construction of hydroelectric dams. Adults returning to hatcheries in the Salmon and Clearwater River basins commingle with each other and with wild stocks. In the Snake River, fish destined for Idaho also commingle with adults returning to Oregon and Washington streams.

The main purpose of this project is to determine the composition of the anadromous fish harvest in the Idaho fishery and to estimate the adult harvest contribution from juveniles produced in Lower Snake River Compensation Plan (LSRCP) hatcheries. Contribution to the Idaho fishery is one of the measures of performance of LSRCP fish. However, there are also steelhead raised by Idaho Power Company (IPC) that are released in the Salmon River drainage. Although the harvest contribution of these fish is not included in this report, they are incorporated in the section on tributary straying. For some release groups, coded wire tagged (CWT'ed) fish from the IPC program provide the basis for LSRCP evaluation.

Harvest management of steelhead in Idaho is directed toward harvest of hatchery fish and protection of wild and naturally-produced fish. Currently, wild stocks are below escapement goals, and protection is necessary to perpetuate these fish. Beginning in 1984, all hatchery-produced steelhead smolts released in Idaho rivers and streams had their adipose fins excised before release so returning adults could be selectively harvested.

During the fall 1993 and spring 1994 seasons, all age groups of hatchery steelhead returning to Idaho were marked by adipose fin clips, and regulations stated that "only steelhead with a missing adipose fin (as evidenced by a healed scar) may be kept." Consequently, the harvest of any wild (unmarked) steelhead was illegal. Table 1 lists the fall and spring regulations.

Representative groups of steelhead are marked with coded wire tags (CWT's) prior to release. Anglers are interviewed and fish snouts are retrieved in all major harvest areas to recover these tags from the fishery. Information is collected and used to estimate timing, straying, exploitation, harvest distribution, and relative abundance of wild and hatchery stocks. Total harvested numbers are estimated by a statewide harvest survey, and the harvest contribution for each hatchery program is derived from tag recoveries. Releasing steelhead smolts directly into the upper Salmon River is being used as a tool for spreading harvest and increasing returns. This report documents some of the behavior and distribution of these returning adults.

In recent years, harvest opportunity for chinook salmon has been limited to hatchery stocks. Harvest is allowed only when returning adult numbers exceed hatchery escapement needs. No harvest was allowed for spring chinook salmon produced by LSRCP facilities in Idaho this year, so this report pertains only to steelhead.

## OBJECTIVES

Identify the number and proportion of the harvest in the Idaho sport fishery, that is produced by LSRCP hatcheries.

Determine the return of LSRCP-produced steelhead to fisheries and hatcheries.

Table 1. Steelhead season dates, bag limits and special restrictions for the Clearwater, Salmon and Snake rivers, 1993-94.

River and Sections	Fall Season Dates	Bag Limits <sup>a</sup>	
Snake River (01)	Sept 1 - Dec 31	2, 4, 10	
Clearwater River (03) <sup>b</sup>			
Clearwater River (03-07) <sup>cd</sup>	Oct 15 - Dec 31		
Salmon River (10-20)	Sept 1 - Dec 31	2, 4, 6	

River and Sections	Spring Season Dates	Bag Limits <sup>a</sup>	
Snake River (01)	Jan 1 - Apr 30	2, 4, 10	
Clearwater River (03 - 07)			
Salmon River (10 - 14)	Jan 1 - Mar 31		
Salmon River (15 - 19)	Jan 1 - Apr 30		
Salmon River (20)			

<sup>a</sup> Bag limits denotes daily, possession and season totals.

<sup>b</sup> Section 03 includes only that portion from its mouth upstream to Memorial Bridge of Highway 12 at Lewiston.

<sup>c</sup>Section 03 includes that portion from Memorial Bridge upstream to Clear Creek.

<sup>d</sup> Catch and release fishery from Sept. 1 through Oct. 14.



Document the occurrence and distribution of adult hatchery steelhead in upper Salmon River tributaries.

## DESCRIPTION OF STUDY AREA

There are three major river systems in Idaho where steelhead are harvested: the Snake, Clearwater, and Salmon rivers (Figure 1; Table 2). All of Idaho's steelhead harvest areas are included in this study, except the upper Snake (section 02), Oxbow (section 27), and Boise River (section 28). These three sections are excluded because no steelhead produced by the LSRCF are harvested there. Steelhead are blocked from reaching the Boise River by dams on the Snake River. However, a portion of the fish returning to Hells Canyon Dam are transplanted and released in the Boise River and Oxbow Reservoir for harvest through the IPC mitigation program.

## METHODS

### Creel Survey

Angler interviews were conducted at check stations and from jet boats and roving vehicles. Angler interview schedules and intensity were designed to observe maximum numbers of harvested fish. Techniques were tailored to sportsman access and harvest methods. For example, on the Clearwater River, a major portion of the fall and winter harvest was taken by boat fishermen, so survey efforts concentrated on interviewing boat anglers. In late spring, the density of boats in a small area became so high that it was prohibitive to interview anglers on the water; therefore, survey efforts were divided between major boat ramps. In the roadless area of the Salmon River, almost all of the angler access was by boat, but most of the fishing effort was from shore. Anglers were contacted by census clerks in jet boats or at check stations located at major egress points.

During angler interviews, data collection included the number of anglers and hours fished, number of fish kept or released, wild or hatchery origin of fish kept or released, fork length of fish kept, and date and river section where fish were caught. Observed fish were inspected for tags and fin clips. Snouts were removed for CWT retrieval from all fish with abnormalities of their left ventral fins, except when anglers desired to keep their fish intact.

Water conditions during the fall season are usually conducive to harvest and the interview schedule can be followed. During the spring season, high, turbid flows can reduce harvest to near zero. Anglers were not interviewed during periods of very low harvest.

### Interview Schedule

**Lower Snake River (01)** - by jet boat with Washington Department of Wildlife personnel and at boat ramps on alternating weekends for ten weekends during the fall and six weekends during the spring season.

**Lower Clearwater and North Fork Clearwater River (03 and 05)** - by roving vehicle one day each week and by jet boat three days each week for 15 weeks in the fall and 10 weeks in the spring season. Interviews were conducted from boat ramps for the last six weeks of the spring season.

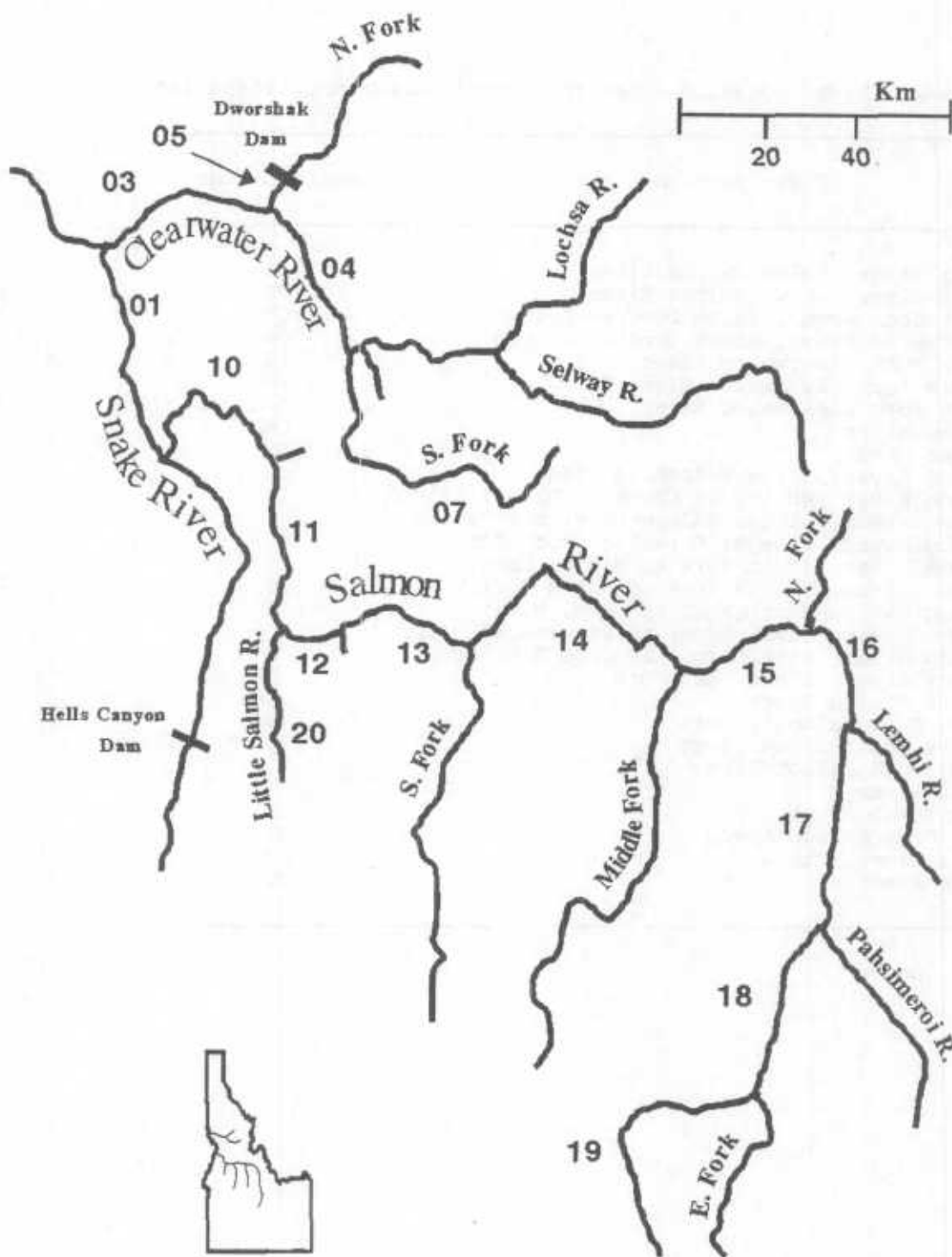


Figure 1. Map of steelhead harvest areas in Idaho.

Table 2. River location codes for Idaho's anadromous fisheries.

River Section	Location Code
Snake River, below Salmon River	01
Snake River, above Salmon River	02
Clearwater River, below Orofino Bridge	03
Clearwater River, above Orofino Bridge	04
North Fork Clearwater River	05
Middle Fork Clearwater River	06
South Fork Clearwater River	07
Selway River	08
Lochsa River	09
Salmon River, below Whitebird Creek	10
Salmon River, Whitebird Creek to Little Salmon	11
Salmon River, Little Salmon to Vinegar Creek	12
Salmon River, Vinegar Creek to South Fork	13
Salmon River, South Fork to Middle Fork	14
Salmon River, Middle Fork to North Fork	15
Salmon River, North Fork to Lemhi River	16
Salmon River, Lemhi River to Pahsimeroi River	17
Salmon River, Pahsimeroi River to East Fork	18
Salmon River, above East Fork	19
Little Salmon River	20
South Fork Salmon River	21
Middle Fork Salmon River	22
North Fork Salmon River	23
Lemhi River	24
Pahsimeroi River	25
East Fork Salmon River	26
Snake River, Oxbow	27
Boise River	28

**Upper Clearwater (including the Middle Fork) and South Fork Clearwater River (04 and 07)** - by roving vehicle on the Upper Clearwater in the fall and on both rivers in the spring, two weekend days per week, for eight weeks in the fall and 10 weeks in the spring.

### **Salmon River**

**Section 10** - by jet boat six weekends in the fall and five weekends in the spring season.

**Section 11** - by roving vehicle two weekdays and two weekend days for 10 weeks in the fall and eight weeks in the spring season.

**Sections 12 and 13** - by a check station at the old lumber mill site near Riggins for 10 weekends in the fall and eight weekends in the spring season.

**Sections 14 and 15** - by a check station near North Fork for 10 weekends in the fall and eight weekends in the spring season.

**Section 16** - by roving vehicle for six weekends in the fall and six weekends in the spring season.

**Section 17** - by roving vehicle for six weekends in the fall and six weekends in the spring season.

**Sections 17 and 18** - by a check station near Challis for 3 weekends in the spring season.

**Section 18** - by roving vehicle for six weekends in the spring season. **Section 19** - by roving vehicle for six weekends in the spring season. **Section 20** - by roving vehicle for six weekends in the spring season.

### **Data Analysis**

Harvest estimates for each river section were obtained from statewide telephone survey results (Appendix A). Beginning with the fall 1990 season, that portion of the Clearwater River up to the Memorial Bridge of Highway 12 at Lewiston was designated river section 03 during the September 1 to October 15 harvest period. Previously, harvest from this section of the Clearwater River had been included with river section 01 (Ball 1992a).

The number of fish checked for marks from each river section, divided by the harvest estimate, yields the sampling rate for each river section by month. Harvested fish that were not seen during the interviews were not included when expressing the proportion of the estimated harvest that was marked.

During angler interviews, hatchery-wild proportions were recorded for fish kept and for total catch, including released fish when their origin could be determined. The harvest of hatchery fish was the product of the hatchery proportion observed in anglers' creels and the estimated monthly harvest from statewide surveys. Seasonal estimates of reported hatchery fish harvest were the summation of monthly estimates. Hatchery harvest estimates for months when harvest was low and no fish were checked were calculated using the hatchery proportion calculated from the last month that data were available. These methods were applied during winter months when fish movement was minimal and the proportion of hatchery fish in the harvest was constant. Harvest estimates of

various CWT groups were calculated by dividing the number of tags recovered by the sampling rate expressed as a decimal and then rounded to whole numbers. Tag group harvest rates were calculated by dividing the estimated harvest of the group by the release group size. Harvest estimates for unmarked groups were calculated using harvest rates from representative mark groups or companion groups.

Hatchery returns were classified by strain (A or B) and ocean-age using length frequencies of previous known-age CWT returns. Marked returns to hatchery racks were subtracted from total returns by strain and ocean-age. Total harvest of unmarked groups was assumed to parallel the performance of marked hatchery rack returns. Where more than one unmarked group returned to a release site, the estimates of harvest and hatchery returns were calculated on the total of the unmarked fish and assumed to apply equally to each group.

Total returns of marked groups were the summation of harvest estimates and hatchery rack returns. However, in 1993-94, returns of some marked groups were insufficient to produce expanded harvest estimates. Returns from off-site releases at Shoup Bridge were estimated from returns of marked fish released at Ellis Bridge and North Fork from CWT'ed fish released by the IPC program. Exploitation was assumed to be the same for all groups. Returns from Little Salmon River and Hammer Creek releases were calculated from marked returns to the Little Salmon River. Exploitation rates were the harvest estimates divided by the sum of the harvest estimates and the number of fish that returned to the hatchery. No attempts were made to include fish that spawn in either tributaries or in the river. Therefore, estimated exploitation rates should be considered maximum rates.

### Tributary Straying

Upper Salmon River tributary streams were visually checked near their mouths for the presence of adult fish in March, April, and early May. We identified 41 tributary streams that could have potential for steelhead spawning and attempted to ascertain when the first fish arrived. After the first visit, ten streams were eliminated from further consideration due to their size, barriers, or gradients (Boulder Creek, Camas Creek, Challis Creek, Deer Creek, Hull Creek, Lyon Creek, Pine Creek, Poison Creek, Twelve-mile Creek, and Warm Springs Creek near Challis Hot Springs).

## RESULTS

### Creel Survey

During the fall 1993 and spring 1994 seasons, we interviewed 20,504 anglers that had harvested 2,627 hatchery and 1 wild fish (Tables 3-17). We physically examined 2,343 hatchery fish for marks, which represented 7.3% of the total steelhead harvest (Table 18). We removed 259 snouts from fish with clipped left ventral fins for CWT retrieval.

The composition of the hatchery steelhead harvest by river section and season was compiled in Table 19. All river sections were included except 02, 27, and 28 (Table 2). Total harvest for the river sections listed was 31,971 steelhead, of which an estimated 4 fish were of wild-natural origin and were illegally possessed.

From anglers' creels, we recovered 195 CWT's from 69 different mark groups. The overall proportion of tags recovered from the number of fish checked for

Table 3. Steelhead fishery interview data (unexpanded) from lower Snake River (01), September 1993 - March 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
September	210	982	5	0	1	2	8	123	75
October	464	1,979	45	0	2	10	57	35	82
November	675	2,781	79	0	5	9	93	30	90
December	52	180	3	0	1	0	4	45	100
Fall total	1,401	5,922	132	0	9	21	162		
Average								37	87
January	75	246	17	0	2	5	24	10	79
February	53	149	8	0	0	3	11	14	73
March	9	36	1	0	0	0	1	36	100
Spring total	137	431	26	0	2	8	36		
Average								12	78
Total	1,538	6,353	158	0	11	29	198		
Average								32	85

Table 4. Steelhead fishery interview data (unexpanded) from lower Clearwater River (03) and North Fork Clearwater River, September 1993 - April 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
September	193	816	20	0	9	5	34	24	85
October	1,395	5,703	160	0	63	88	311	18	72
November	1,473	6,173	133	0	11	47	191	32	75
December	625	2,120	67	0	0	30	97	22	69
Fall total	3,686	14,812	380	0	83	170	633		
Average								23	73
January	1,319	4,947	210	0	53	55	318	16	83
February	1,379	6,149	166	0	37	49	252	24	81
March	1,094	5,492	112	0	60	25	197	28	87
April	64	276	10	0	1	0	11	25	91
Spring total	3,856	16,864	498	0	151	129	778		
Average								22	83
Total	7,542	31,676	878	0	234	299	1,411		
Average								22	79

Table 5. Steelhead fishery interview data (unexpanded) from upper Clearwater River and Middle Fork Clearwater rivers (04),  
October 1993 - April 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	171	520	18	0	2	14	34	15	59
November	76	194	4	0	0	1	5	39	80
Fall total	247	714	22	0	2	15	39		
Average								18	62
March	68	207	9	0	2	7	18	12	50
April	37	87	3	0	0	0	3	29	100
Spring total	105	294	12	0	2	7	21		
Average								14	67
Total	352	1,008	34	0	4	22	60		
Average								17	63



Table 6. Steelhead fishery interview data (unexpanded) from South Fork Clearwater River (07), October 1993 - April 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	5	7	0	0	0	0	0	0	0
Fall total	5	7	0	0	0	0	0		
Average								0	0
March	89	238	4	0	0	1	5	48	80
April	41	138	0	0	1	0	1	138	100
Spring total	130	376	4	0	1	1	6		
Average								63	83
Total	135	383	4	0	1	1	6		
Average								64	83

Table 7. Steelhead fishery interview data (unexpanded) from Salmon River Section 10, September 1993 - March 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
September	9	23	1	0	0	0	1	23	100
October	75	231	2	0	1	1	4	58	75
November	19	101	10	0	0	0	10	10	100
Fall total	103	355	13	0	1	1	15		
Average								24	93
January	10	13	0	0	0	0	0	0	0
February	24	58	6	0	0	1	7	8	86
March	6	35	0	0	0	0	0	0	0
Spring total	40	106	6	0	0	1	7		
Average								15	86
Total	143	461	19	0	1	2	22		
Average								21	91

Table 8. Steelhead fishery interview data (unexpanded) from Salmon River Section 11, September 1993 - March 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
September	12	24	0	0	0	1	1	24	0
October	319	1,104	26	0	4	13	43	26	70
November	257	936	27	0	4	5	36	26	86
Fall total	588	2,064	53	0	8	19	80		
Average								26	76
February	94	266	10	0	3	0	13	20	100
March	258	786	22	0	0	1	23	34	96
Spring total	352	1,052	32	0	3	1	36		
Average								29	97
Total	940	3,116	85	0	11	20	116		
Average								27	83

Table 9. Steelhead fishery interview data (unexpanded) from Salmon River Section 12, September 1993 - March 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
September	3	7	0	0	2	0	2	4	100
October	627	4,737	134	1	20	42	197	24	78
November	461	2,930	43	0	14	7	64	46	89
Fall total	1,091	7,674	177	1	36	49	263		
Average								29	81
February	102	357	4	0	0	2	6	60	67
March	301	1,249	23	0	3	3	29	43	90
Spring total	403	1,606	27	0	3	5	35		
Average								46	86
Total	1,494	9,280	204	1	39	54	298		
Average								31	82

Table 10. Steelhead fishery interview data (unexpanded) from Salmon River Section 13, October 1993 - March 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	113	1,444	33	0	3	27	63	23	57
November	88	1,220	13	0	0	12	25	49	52
Fall total	201	2,664	46	0	3	39	88		
Average								30	56
March	19	292	3	0	0	5	8	37	38
Spring total	19	292	3	0	0	5	8		
Average								37	38
Total	220	2,956	49	0	3	44	96		
Average								31	54

Table 11. Steelhead fishery interview data (unexpanded) from Salmon River Section 14, October 1993 - March 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	415	6,482	83	0	4	67	154	42	56
November	141	2,236	38	0	7	21	66	34	68
Fall total	556	8,718	121	0	11	88	220		
Average								40	60
March	178	2,080	16	0	0	24	40	52	40
Spring total	178	2,080	16	0	0	24	40		
Average								52	40
Total	734	10,798	137	0	11	112	260		
Average								42	57

Table 12. Steelhead fishery interview data (unexpanded) from Salmon River Section 15, October 1993 - April 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	984	10,706	127	0	7	56	190	56	71
November	472	4,615	41	0	9	11	61	76	82
Fall total	1,456	15,321	168	0	16	67	251		
Average								61	73
February	3	14	0	0	0	0	0	0	0
March	1,372	12,922	362	0	192	54	608	21	91
April	177	1,265	25	0	10	3	38	33	92
Spring total	1,552	14,201	387	0	202	57	646		
Average								22	91
Total	3,008	29,522	555	0	218	124	897		
Average								33	86

Table 13. Steelhead fishery interview data (unexpanded) from Salmon River Section 16, October 1993 - April 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	162	608	16	0	4	5	25	24	80
November	124	530	17	0	0	4	21	25	81
Fall total	286	1,138	33	0	4	9	46		
Average								25	80
February	94	370	6	0	1	1	8	46	88
March	358	1,307	14	0	1	6	21	62	71
April	105	543	13	0	1	5	19	29	74
Spring total	557	2,220	33	0	3	12	48		
Average								46	75
Total	843	3,358	66	0	7	21	94		
Average								36	78



Table 14. Steelhead fishery interview data (unexpanded) from Salmon River Section 17, October 1993 - April 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	9	25	0	0	0	0	0	0	0
November	15	99	1	0	0	1	2	50	50
Fall total	24	124	1	0	0	1	2		
Average								62	50
February	11	53	1	0	0	0	1	53	100
March	518	2,344	27	0	3	0	30	78	90
April	449	3,734	59	0	13	5	77	48	94
Spring total	978	6,131	87	0	16	5	108		
Average								57	95
Total	1,002	6,255	88	0	16	6	110		
Average								57	95

Table 15. Steelhead fishery interview data (unexpanded) from Salmon River Section 18, March - April 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
March	109	367	5	0	3	0	8	46	63
April	542	3,588	67	0	77	7	151	24	95
Spring total	651	3,955	72	0	80	7	159		
Average								25	96

Table 16. Steelhead fishery interview data (unexpanded) from Salmon River Section 19, March - April 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
March	14	29	0	0	3	0	3	10	100
April	452	1,711	31	0	15	6	52	33	88
Spring total	466	1,740	31	0	18	6	55		
Average								32	89

Table 17. Steelhead fishery interview data (unexpanded) from Salmon River Section 20, October 1993 - April 1994.

Dates	No. Anglers	Total Hours Fished	Steelhead Kept		Steelhead Released		Total	Hours/ Fish	Percent Hatchery
			Hatchery	Wild	Hatchery	Wild			
October	11	24	4	0	0	0	4	6	100
November	24	61	1	0	1	0	2	31	100
Fall total	35	85	5	0	1	0	6		
Average								14	100
February	11	32	0	0	0	0	0	0	0
March	553	1,749	73	0	10	5	88	20	94
April	837	3,017	169	0	108	23	300	10	92
Spring total	1,401	4,798	242	0	118	28	388		
Average								12	93
Total	1,436	4,883	247	0	119	28	394		
Average								12	93

Table 18. Proportion of estimated harvest by river section that was examined for marks, 1993-94.

River Section	No. Fish Checked	Estimated Harvest <sup>a</sup>	Sample Rate (%)
01	148	3,788	3.9
03 & 05	752	12,332	6.1
04	34	1,149	3.0
07	4	582	0.7
10	18	1,988	0.9
11	79	2,169	3.6
12	188	939	20.0
13	41	207	19.8
14	126	1,256	10.0
15	504	3,319	15.2
16	59	896	6.6
17	78	1,241	6.3
18	64	461	13.9
19	23	349	6.6
20	225	1,294	17.4
Total	2,343	31,971	
Average			7.3

<sup>a</sup>Data from statewide telephone survey (unpublished).

Table 19. Estimated number of hatchery steelhead harvested in the lower Snake, Clearwater and Salmon rivers during the 1993-94 seasons.

River and Section	Fall Season - 1993				Spring Season - 1994			Total Harvest	
	Estimated Harvest <sup>f</sup>	Percent Hatchery	No.	Hatchery Fish	Estimated Harvest <sup>a</sup>	Percent Hatchery	No.	Hatchery Fish	No. Hatchery Fish
<u>Snake R.</u>									
01	2,849	100		2,849	939	100		939	3,788
<u>Clearwater R.</u>									
03 & 05	6,195	100		6,195	6,137	100		6,137	12,332
04	679	100		679	470	100		470	1,149
07	52	--		52 <sup>b</sup>	530	100		530	582
Clwtr. Total	6,926			6,926	7,137			7,137	14,063
Average		100				100			
<u>Salmon River</u>									
10	1,215	100		1,215	773	100		773	1,988
11	1,032	100		1,032	1,137	100		1,137	2,169
12	484	99.4		481	455	100		455	936
13	131	100		131	76	100		76	207
14	575	100		575	681	100		681	1,256
15	1,228	100		1,228	2,091	100		2,091	3,319
16	274	100		274	622	100		622	896
17	105	100		105	1,136	100		1,136	1,241
18	52	--		52 <sup>b</sup>	409	100		409	461
19	0	--		0	349	100		349	349
20	157	100		157	1,137	100		1,137	1,294
Salmon Total	5,254			5,250	8,866			8,866	14,116
Average		99.8				100			
1993-94 Total	15,029			15,025	16,942			16,942	31,967

<sup>a</sup> From statewide surveys.

<sup>b</sup> Assumed to be of hatchery origin.

marks was 8.3% (Table 18). The number of tags recovered, the estimated harvest of tag code groups by month and river section, and the total estimated harvest of tag code groups for the fall and spring seasons are also listed in Appendix B. Of the 69 mark groups that yielded CWT's, 52 were from releases in Idaho (Appendices B, C, and D). There were 43 additional CWT's from 7 tag groups that returned to hatchery racks, but were not recovered from the fishery.

Coded wire tags were also recovered from nine Washington tag groups and seven Oregon tag groups (Appendices B and E). Seven Washington tag groups were from releases on the Tucannon River, and two from the Touchet River. Five Oregon tag groups were from releases in the Wallowa River, and one each from the Imnaha and Umatilla rivers.

Estimates of total returns of LSRCP-reared fish were summarized in Table 20. All Idaho returns from the LSRCP program that returned in 1993-94 were from releases in the Salmon River drainage. However, they were also recovered from the fishery in the Snake and Clearwater rivers. The total estimated return of adult steelhead to Idaho in 1993-94 from the LSRCP program, which includes harvest by Idaho anglers, hatchery returns, and off-site escapement, was 7,534 fish. The LSRCP contribution to Idaho's hatchery steelhead harvest (except sections 02, 27, and 28) in 1993-94 was 5,811. This number does not include an estimated harvest of 642 LSRCP-reared fish from Oregon and Washington (Appendix B). Additionally, other LSRCP-reared fish released in Idaho, but caught by Oregon and Washington anglers, were not included in this report.

The maximum exploitation rate for adult steelhead returning to Sawtooth Hatchery in 1993-94 was 86%. East Fork Salmon River returns were exploited at a maximum rate of 97%. In the Little Salmon River, and for off-site releases at Hammer Creek, exploitation was not quantified, but was estimated to be 50% (Table 20).

### **Tributary Straying**

We began surveying tributary streams for adult spawning steelhead on March 8, but we didn't find any adult fish until March 29. We visited most of the streams about twice each week until adult steelhead were observed. The first spawners were located in the Lake Creek Diversion and also in Rattlesnake Creek, 11 km upstream (Figure 2). Electrofishing surveys continued until April 28, when the streams were either high, turbid, or we could not find any more adults. Of the 31 streams surveyed between Colson Creek and Slate Creek, we electrofished 16 different tributaries and classified 208 adult hatchery steelhead and 16 wild-naturals (Table 21). From those streams where we handled adults, we classified at least one and as many as 21 fish per tributary per electrofishing day. The hatchery fish were 63% female, and 92% were A-strain. Of these 191 A-strain fish, 41% were one-ocean age and 59% were two-ocean.

We recovered 38 CWT's from tributary fish (Table 22). Tagged fish were from hatchery releases at Sawtooth, Pahsimeroi, and the East Fork, as well as off-site releases at the North Fork of the Salmon River and Ellis Bridge.

From 67,494 smolts released off-site with CWT's at Ellis Bridge, 6 adults were recovered in tributaries and 6 entered the adult trap at the Pahsimeroi Hatchery (Table 22). The other off-site release at the mouth of the North Fork Salmon River also produced CWT recoveries upstream of the release site as well as one recovery downstream. From 67,631 marked fish released in the Salmon River at North Fork, 6 CWT'ed fish were recovered from tributaries upstream of North Fork, and 1 CWTed steelhead was found 48 km downstream in Owl Creek (Table 22). None entered the trap at Pahsimeroi Hatchery.

Table 20. Summary of 1993-94 harvest estimates and hatchery returns of steelhead produced by LSRCP hatcheries.

Release Year	Strain and Ocean-Age	No. of Fish Released	Release Site	Hatchery Rearing	Marks	Estimated Number of Fish		
						Harvested	Hatchery Return <sup>a</sup>	Total
1992	A-I	53,463	Sawtooth Hatchery	HNFH <sup>b</sup>	CWT10/15/30	265	2	267
1992	A-I	45,646	Sawtooth Hatchery	HNFH	CWT10/40/07	5	4	9
1992	A-I	18,031	Sawtooth Hatchery	HNFH	CWT10/44/21	26	1	27
1992	A-I	18,518	Sawtooth Hatchery	HNFH	CWT10/44/22	0	2	2
1992	A-I	19,558	Sawtooth Hatchery	HNFH	CWT10/44/23	4	2	6
1992	A-I	1,495	Sawtooth Hatchery	HNFH	PIT	1	0	1
1992	A-I	470,072	Sawtooth Hatchery	HNFH	None	162	91	253
1992	A-I	117,300	Sawtooth Hatchery	MVSH <sup>c</sup>	None	40	23	63
1992	A-I	223,406	Pahsimeroi R.	HNFH	None	270	125	395
1992	A-I	20,991	Little Salmon R.	MVSH	CWT10/44/15	5	5	10
1992	A-I	22,123	Little Salmon R.	MVSH	CWT10/44/16	5	5	10
1992	A-I	21,504	Little Salmon R.	MVSH	CWT10/44/17	8	8	16
1992	A-I	100	Little Salmon R.	MVSH	PIT + CWT 10/44/15	0	0	0
1992	A-I	100	Little Salmon R.	MVSH	PIT + CWT 10/44/16	0	0	0
1992	A-I	100	Little Salmon R.	MVSH	PIT + CWT 10/44/17	0	0	0
1992	A-I	936,982	Little Salmon R.	MVSH	None	261	261	522
	Subtotal	1,969,389				1,052	529	1,581
1991	A-II	21,050	Sawtooth Hatchery	HNFH	CWT10/43/33	60	3	63
1991	A-II	20,129	Sawtooth Hatchery	HNFH	CWT10/43/34	26	5	31
1991	A-II	12,066	Sawtooth Hatchery	HNFH	CWT10/43/35	19	4	23
1991	A-II	21,775	Sawtooth Hatchery	HNFH	CWT10/43/36	12	3	15
1991	A-II	20,318	Sawtooth Hatchery	HNFH	CWT10/43/37	31	1	32
1991	A-II	19,338	Sawtooth Hatchery	HNFH	CWT10/43/38	29	4	33
1991	A-II	985	Sawtooth Hatchery	HNFH	PIT	1	0	1
1991	A-II	864,138	Sawtooth Hatchery	HNFH	None	1,013	132	1,145
1991	A-II	304,907	Sawtooth Hatchery	HNFH <sup>d</sup>	None	--	--	--
1991	A-II	364,700	Sawtooth Hatchery	MVSH	None	427	55	482
1991	A-II	135,100	Pahsimeroi R.	MVSH	None	205	98	303
1991	A-II	97,800	Salmon R. @ Shoup Br.	MVSH	None	132	57	189
1991	A-II	186,300	Hammer Cr.	MVSH	None	200	200	400
1991	A-II	21,809	Little Salmon R.	MVSH	CWT10/43/17	21	21	42
1991	A-II	22,704	Little Salmon R.	MVSH	CWT10/43/18	37	37	74
1991	A-II	21,484	Little Salmon R.	MVSH	CWT10/43/19	13	13	26



Table 20. Continued.

Release Year	Strain and Ocean-Age	No. of Fish Released	Release Site	Hatchery Rearing	Marks	Estimated Number of Fish		
						Harvested	Hatchery Return <sup>a</sup>	Total
1991	A-II	1,600	Little Salmon R.	MVSH	PIT	2	1	3
1991	A-II	242,703	Little Salmon R.	MVSH	None	261	261	522
	Subtotal	2,378,906				2,489	895	3,384
1992	B-I	21,671	East Fork Salmon R.	MVSH	CWT10/44/18	0	0	0
1992	B-I	21,468	East Fork Salmon R.	MVSH	CWT10/44/19	0	0	0
1992	B-I	20,721	East Fork Salmon R.	MVSH	CWT10/44/20	20	1	21
1992	B-I	100	East Fork Salmon R.	MVSH	PIT + CWT 10/44/18	0	0	0
1992	B-I	100	East Fork Salmon R.	MVSH	PIT + CWT 10/44/19	0	0	0
1992	B-I	100	East Fork Salmon R.	MVSH	PIT + CWT 10/44/20	0	0	0
1992	B-I	976,897	East Fork Salmon R.	MVSH	None	0	0	0
1992	B-I	302,335	East Fork Salmon R.	HNFH	None	292	14	306
1992	B-I	18,386	Little Salmon R.	HNFH	CWT 10/44/07	0	0	0
1992	B-I	19,450	Little Salmon R.	HNFH	CWT 10/44/08	0	0	0
1992	B-I	17,390	Little Salmon R.	HNFH	CWT 10/44/09	0	0	0
1992	B-I	245,308	Little Salmon R.	HNFH	None	0	0	0
	Subtotal	1,643,926				312	15	327
1991	B-II	20,498	East Fork Salmon R.	MVSH	CWT 10/43/14	10	0	10
1991	B-II	21,017	East Fork Salmon R.	MVSH	CWT 10/43/15	64	0	64
1991	B-II	20,312	East Fork Salmon R.	MVSH	CWT 10/43/16	53	0	53
1991	B-II	1,500	East Fork Salmon R.	MVSH	PIT	0	0	0
1991	B-II	22,525	East Fork Salmon R.	MVSH	CWT 10/43/20	16	1	17
1991	B-II	22,483	East Fork Salmon R.	MVSH	CWT 10/43/21	6	1	7
1991	B-II	21,375	East Fork Salmon R.	MVSH	CWT 10/43/22	51	1	52
1991	B-II	838,090	East Fork Salmon R.	MVSH	None	1,466	47	1,513
1991	B-II	540,733	East Fork Salmon R.	HNFH <sup>d</sup>	None	--	--	--
1991	B-II	19,831	Little Salmon R.	HNFH	CWT 10/43/32	15	15	30
1991	B-II	19,813	Little Salmon R.	HNFH	CWT 10/43/39	5	5	10
1991	B-II	18,877	Little Salmon R.	HNFH	CWT 10/43/40	10	10	20
1991	B-II	501	Little Salmon R.	HNFH	PIT	0	0	0
1991	B-II	398,155	Little Salmon R.	HNFH	None	204	204	408
1991	B-II	120,323	Little Salmon R.	HNFH <sup>d</sup>	None	--	--	--
	Subtotal	2,086,033				1,900	284	2,184

TABLES-H

Table 20. Continued.

Release Year	Strain and Ocean-Age	No. of Fish Released	Release Site		Hatchery Rearing	Marks	Estimated Number of Fish		
							Harvested	Hatchery Return <sup>a</sup>	Total
1990	B-III	64,150	East Fork	Salmon R.	HNFH	None	11	0	11
1990	B-III	40,905	East Fork	Salmon R.	MVSH	CWT10/40/58	8	0	8
1990	B-III	14,964	East Fork	Salmon R.	MVSH	CWT10/42/33	0	0	0
1990	B-III	15,157	East Fork	Salmon R.	MVSH	CWT10/42/34	0	0	0
1990	B-III	14,642	East Fork	Salmon R.	MVSH	CWT10/42/35	0	0	0
1990	B-III	15,474	East Fork	Salmon R.	MVSH	CWT10/42/36	0	0	0
1990	B-III	15,971	East Fork	Salmon R.	MVSH	CWT10/42/37	0	0	0
1990	B-III	14,958	East Fork	Salmon R.	MVSH	CWT10/42/38	0	0	0
1990	B-III	792,129	East Fork	Salmon R.	MVSH	None	39	0	39
1990	B-III	14,841	Little Salmon	R.	HNFH	CWT10/42/30	0	0	0
1990	B-III	14,065	Little Salmon	R.	HNFH	CWT10/42/31	0	0	0
1990	B-III	13,416	Little Salmon	R.	HNFH	CWT10/42/32	0	0	0
1990	B-III	351,030	Little Salmon	R.	HNFH	None	0	0	0
1990	B-III	162,700	Slate Cr.		MVSH <sup>d</sup>	None	--	--	--
	Subtotal	1,381,302					58	0	58

<sup>a</sup> Includes off-site escapement.<sup>b</sup> HNFH = Hagerman National Steelhead Hatchery.<sup>c</sup> MVSH = Magic Valley Steelhead Hatchery.<sup>d</sup> Fall release of presmolts.

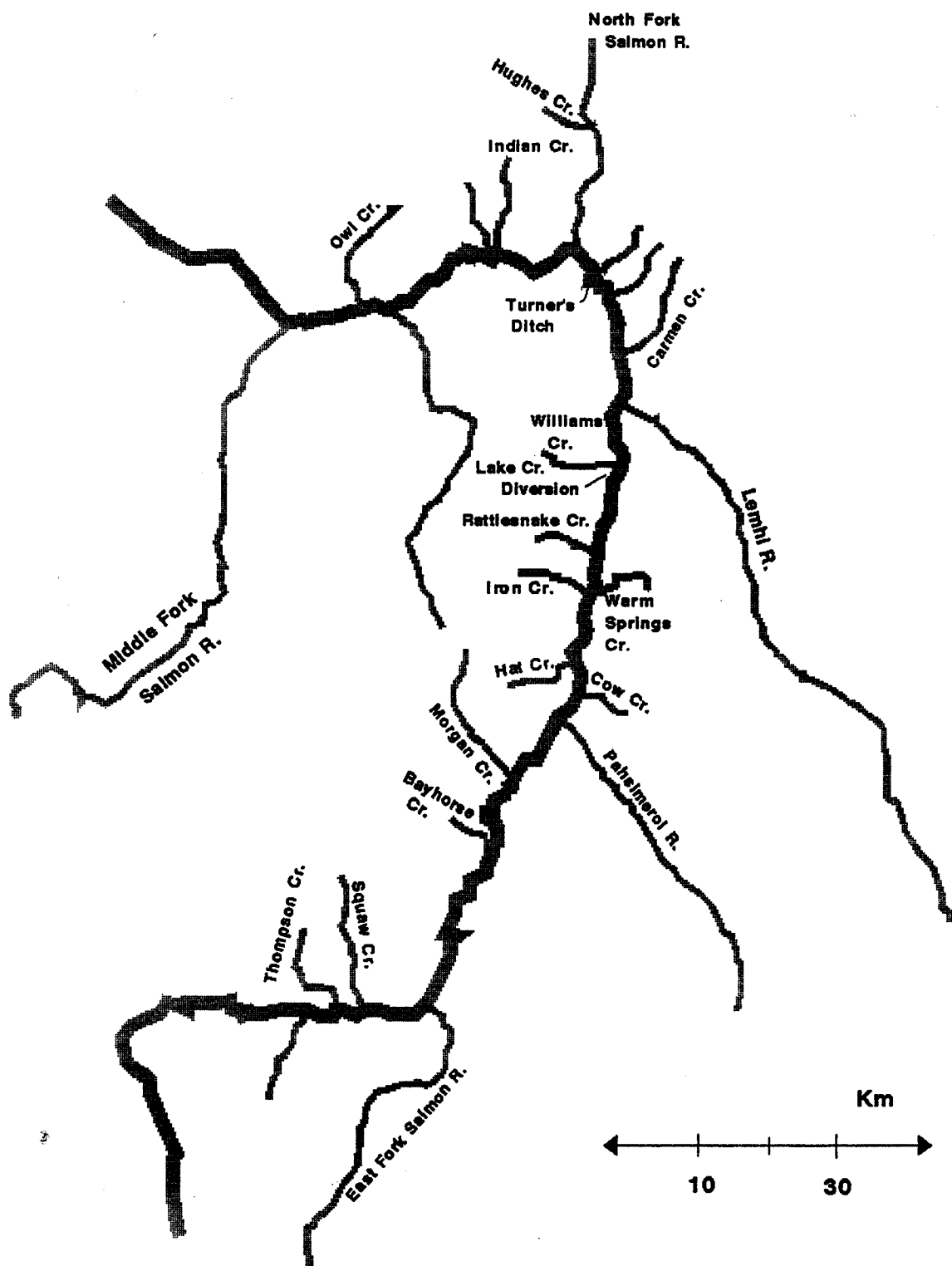


Figure 2. Map of upper Salmon River tributaries.

Table 21. Adult steelhead collected from upper Salmon River tributaries, 1994.

Stream	Collection Date	Hatchery Fish Strain and Ocean-age			Sex		Total No. of Fish	
		A-I	A-II	B-strain	Male	Female	Hatchery	Wild/Natural
Bayhorse	4/21	2	0	0	0	2	2	0
Carmen	4/1	1	2	0	0	3	3	0
	4/5	2	4	1	3	4	7	0
	4/7	1	3	0	1	3	4	0
	4/12	6	6	1	5	8	13	0
	4 / 13	2	0	0	1	1	2	0
	4/15	2	2	0	0	4	4	0
	4/19	2	2	0	0	4	4	0
	4/26	1	3	0	1	3	4	0
Cow	4/14	1	0	0	0	1	1	0
	4/18	1	0	0	1	0	1	0
	4/22	1	0	1	1	1	2	0
Hat	4/4	5	1	0	2	4	6	1
	4/8	0	2	0	0	2	2	0
	4/14	5	10	3	6	12	18	3
	4/18	6	12	1	8	11	19	1
	4/22	1	2	2	4	1	5	0
	4/28	1	3	1	1	4	5	1
Hughes	4/20	0	1	0	0	1	1	1
Indian	4/1	0	2	0	0	2	2	0
	4/6	3	0	0	2	1	3	0
	4/11	1	1	0	1	1	2	0
	4/13	1	1	0	2	0	2	0
	4/19	0	4	0	2	2	4	0
Iron	4/15	0	3	0	2	1	3	0
Lake Cr.	3/29	0	1	0	0	1	1	0
Diversion	4/12	2	6	0	4	4	8	1

Table 21. Continued.

Stream	Collection Date	Hatchery Fish Strain and Ocean-age			Sex		Total No. of Fish	
		A-I	A-II	B-strain	Male	Female	Hatchery	Wild/Natural
Morgan	4/5	0	5	0	4	1	5	1
	4/8	0	1	0	0	1	1	0
	4/14	2	5	3	3	7	10	2
	4/18	3	6	1	1	9	10	2
Owl	4/6	1	1	0	1	1	2	0
Rattlesnake	3/29	2	0	0	1	1	2	0
	4/4	1	2	0	2	1	3	0
	4/12	4	7	0	5	6	11	1
	4/15	2	2	0	3	1	4	1
	4/21	2	1	0	0	3	3	0
	4/26	1	0	0	0	1	1	0
Squaw	4/28	3	0	0	2	1	3	0
Thompson	4/28	1	0	0	1	0	1	0
Turner's Ditch	4/7	2	3	2	1	6	7	0
	4/12	4	3	1	1	7	8	0
Warm Springs	4/4	1	1	0	1	1	2	0
	4/8	2	0	0	1	1	2	0
Williams	4/12	1	2	0	2	1	3	1
	4/15	0	2	0	0	2	2	0
Total (%)		79 (38)	112 (54)	17 (8)	76 (37)	132 (63)	208 (93)	16 (7)

Table 22. Coded wire tag (CWT) recoveries from upper Salmon River tributaries, 1994.

Recovery Stream	CWT Datacode	Recovery Date	Release Site	Strain and Ocean-age	No.of Fish
Carmen	10/15/30	4/19	Sawtooth Hatchery	A-I	1
	10/43/26	4/01	Salmon R. @ North Fork	A-II	1
	10/43/26	4/15	Salmon R. @ Ellis Bridge	A-II	1
	10/43/37	4/12	Sawtooth Hatchery	A-II	1
	10/44/06	4/13	Pahsimeroi R.	A-I	1
Cow	10/44/04	4/22	Pahsimeroi R.	A-I	1
Hat	10/15/30	4/04	Sawtooth Hatchery	A-I	1
	10/43/15	4/14	East Fork Salmon R.	B-II	1
	10/43/16	4/14	East Fork Salmon R.	B-II	1
	10/43/29	4/14	Salmon R. @ Ellis Bridge	A-II	1
	10/43/29	4/18	Salmon R. @ Ellis Bridge	A-II	1
	10/43/29	4/28	Salmon R. @ Ellis Bridge	A-II	1
	10/43/30	4/14	Salmon R. @ Ellis Bridge	A-II	2
	10/44/01	4/14	Pahsimeroi R.	A-I	1
	23/24/47	4/18	Lower Granite Dam	?-I	1
Indian	10/43/16	4/01	East Fork Salmon R.	B-II	1
	10/44/21	4/06	Sawtooth Hatchery	A-I	1
Iron	10/43/25	4/15	Salmon R. @ North Fork	A-II	1
Lake Cr. Diversion	10/43/25	4/12	Salmon R. @ North Fork	A-II	1
Morgan	10/43/24	4/14	East Fork Salmon R.	B-II	1
	10/43/35	4/05	Sawtooth Hatchery	A-II	1
Owl	10/43/25	4/06	Salmon R. @ North Fork	A-II	1
Rattlesnake	10/43/24	4/21	Salmon R. @ North Fork	A-II	1
	10/43/26	4/12	Salmon R. @ North Fork	A-II	1
	10/43/30	4/12	Salmon R. @ Ellis Bridge	A-II	1
	10/44/06	4/15	Pahsimeroi R.	A-I	1
	10/44/06	4/12	Pahsimeroi R.	A-I	1
Thompson	10/15/30	4/28	Sawtooth Hatchery	A-I	1
Turner's Ditch	10/15/30	4/12	Sawtooth Hatchery	A-I	1
	10/42/34	4/07	East Fork Salmon R.	B-III	1
	10/43/14	4/07	East Fork Salmon R.	B-II	1
	10/43/15	4/12	East Fork Salmon R.	B-II	1
	10/43/26	4/12	Salmon R. @ North Fork	A-II	1
Warm Springs	10/15/30	4/08	Sawtooth Hatchery	A-I	1
Williams	10/40/07	4/12	Sawtooth Hatchery	A-I	1
	10/43/20	4/15	East Fork Salmon R.	B-II	1
	10/43/35	4/12	Sawtooth Hatchery	A-I	1

All CWT recoveries from steelhead released at upper Salmon River hatcheries were recovered downstream of their release sites. From 155,216 CWT's released at Sawtooth Hatchery in 1992, we recovered eight tags from steelhead in tributaries and 11 fish with tags entered the trap at Sawtooth Hatchery. One fish, released at Sawtooth in 1992, was recovered in Indian Creek, 253 km downstream from its release site. This one-ocean fish, marked with tag code 10/44/21, was recovered the greatest distance away from its release site.

From the 1991 release at Sawtooth Hatchery of 114,676 CWT'ed fish, 2 two-ocean fish were recovered from tributaries and 20 marked fish returned to Sawtooth Hatchery. From 126,206 A-strain steelhead with CWT's released at the Pahsimeroi Hatchery in 1992, 5 were recovered in tributaries and 38 returned to the Pahsimeroi weir. From 128,210 CWT'ed B-strain steelhead released in the East Fork Salmon River in 1991, we recovered 7 from tributaries, 2 returned to the East Fork trap, and 1 returned to the Pahsimeroi trap. One three-ocean East Fork fish was recovered from Turner's Ditch, 156 km downstream from the mouth of the East Fork Salmon River. No other fish from this 1990 CWT release were found in the fishery or at hatchery racks. This fish, carrying tag code 10/42/34, was recovered the greatest distance downstream of East Fork B-strain releases.

## **DISCUSSION**

### **Harvest of Sawtooth Hatchery Releases**

Returns of steelhead released from Sawtooth Hatchery in 1991 are now complete. From a total release of 1,344,499 smolts, we estimated a return of 4,460 adults after one ocean-year and 1,825 after two ocean-years. The total return of 6,285 was 0.47% of the number released, and a maximum exploitation rate of 80% of the adult returns were harvested (Ball 1996) (Table 20). There were also 304,907 pre-smolts released in the fall of 1990. There were no CWT's in these fish, and no attempt was made to estimate adult returns.

Adult returns from the 1992 Sawtooth Hatchery releases have returned after their first ocean-year. From 744,090 smolts released, 628 (0.08%) returned to the fishery and Sawtooth Hatchery (Table 20).

### **Harvest of East Fork Salmon River Releases**

We recovered two CWT's from B-strain adults that returned after three years in the ocean (Appendix B). From 988,350 smolts released in 1990, we estimated that 168 (16%) returned after one ocean year, 841 (80%) returned after two ocean years, and 39 (4%) after three ocean years (Ball 1992b, 1996) (Table 20). The adult return from the 1990 release is now complete. There were 1,048 returning adults (0.11%), of which 88% were harvested. B-strain steelhead in the Clearwater drainage commonly return a portion of the adults after three ocean-years (Roseberg et al. 1991). In the upper Salmon River drainage, however, the proportion of three-ocean returnees from East Fork B-strain releases is very small. Of the 138 known-age CWT fishery recoveries of East Fork marked fish, to date only 4 (2.9%) East Fork CWT fish have been recovered as three-ocean from the fishery. An additional two (1.5%) CWT'ed fish have been recovered at the East Fork trap as three-ocean since CWT'ed fish were first released there beginning in 1983.

From 1,508,533 smolts released in 1991, we estimate that 634 returned after one ocean-year, and 1,716 returned after two ocean-years (Ball 1996) (Table 20). The total return to date is 2,350 (0.16%) adults, of which 2,241 (95%) were harvested.

The 1992 release of 1,334,392 smolts into the East Fork returned an estimated 327 (0.02%) adults after one ocean-year. Of these one-ocean returns, 312 (95%) were harvested.

Since 1989, smolts released into the East Fork Salmon River have been from parents that returned to the East Fork trap and from adults from Dworshak National Fish Hatchery on the Clearwater River. Each year since 1989, each stock has been marked with CWT's to evaluate their performance (Table 23).

To date, from 179,241 CWT'ed smolts released from East Fork stock, 54 adults were harvested in Idaho and 32 returned to the hatchery rack. From 193,298 smolts released with CWT's from Dworshak stock, 29 adults have been harvested in the Idaho fishery and 6 returned to the hatchery rack. From comparable numbers of smolts released, the East Fork stock produced twice as much harvest as the Dworshak progeny. Tag code recoveries through 1993-94 show that 59% of East Fork and Dworshak stock steelhead harvest occurred downriver of the Idaho harvest areas (Table 23). Downriver harvest included Oregon and Washington sport fisheries, and commercial and Indian gill net operations. These harvest areas included the confluence of the Clearwater and Snake rivers downstream to the Bonneville Dam pool on the lower Columbia River. Based on CWT recoveries, comparison of downriver harvest between the two stocks showed no significant difference. To date, downriver harvest accounted for 59% of East Fork stock CWT recoveries, compared to 60% for Dworshak stock CWT recoveries. However, by the time these stocks returned to Idaho waters, East Fork stock fish produced 1.9 times more CWT recoveries in the fishery than Dworshak stock fish. Likewise, the East Fork stock returned 5.8 times as many spawners to the hatchery rack as the Dworshak stock.

#### **Harvest of Little Salmon River Releases**

In 1991, there were both A-strain and B-strain smolts released into the Little Salmon River. Adult returns after two ocean-years are complete. Based on past performance of B-strain fish returning to the Salmon River, very few three-ocean fish are expected. From the 310,300 A-strain smolts released, 386 adults returned after one ocean-year, and 667 after two ocean-years. The total return was estimated to be 1,053 (0.34%) which includes an escapement of 50% past the fishery. From the 577,510 B-strain smolts released, 256 adults returned after one ocean-year, and 468 after two ocean-years. The total return was 724 (0.13%) which includes an estimated escapement of 50% past the fishery also.

Since the onset of the LSRCP, there have been three release years when both A- and B-strain steelhead were released into the Little Salmon River. In 1984, there were 96,425 A-strain and 95,624 B-strain smolts released with CWT's (Ball 1989). The estimated adult returns from these releases were 1,697 (1.76%) A-strain and 180 (0.19%) B-strain. Comparatively, the A-strain fish returned 9.3 times more adults (Ball 1989). In 1990, there were 80,465 A-strain and 392,812 B-strain smolts released, but only the B-strain group was represented by CWT's (Ball 1996). The estimated return rate of B-strain fish (0.22%) was higher than the 0.16% reported for the A-strain fish. However, the difference is a function of using the same CWT's for both strains with different returns of one- and two-ocean numbers.

#### **Harvest of Hammer Creek Releases**

The 1991 release of 186,300 A-strain smolts into the Salmon River at the Hammer Creek boat ramp is now complete. An estimated 232 adults returned after



Table 23. Coded wire tag (CWT) recoveries of East Fork Salmon River steelhead releases - East Fork stock vs. Dworshak stock.

Release Year and Tag Codes	I-Ocean			II-Ocean			III-Ocean			Total No. CWT's
	Harvest Downriver	ID.	Rack Returns	Harvest Downriver	ID.	Rack Returns	Harvest Downriver	ID.	Rack Returns	
1989-E. Fork Stock										
CWT 10/41/44, 10/41/45, 10/41/46 n = 44,064	5	0	4	14	12	3	0	0	0	38
Dworshak Stock										
CWT 10/41/32, 10/41/33, 10/41/34 n = 43,569	0	0	1	0	6	1	0	1	0	9
1990-E. Fork Stock										
CWT 10/42/36, 10/42/37, 10/42/38 n = 46,403	1	4	4	25	22	10	4	1	0	71
Dworshak Stock										
CWT 10/42/33, 10/42/34, 10/42/35 n = 44,763	2	1	1	16	7	1	3	0	0	31
1991-E. Fork Stock										
CWT 10/43/20, 10/43/21, 10/43/22 n = 66,383	5	1	7	23	12	3 <sup>a</sup>				51
Dworshak Stock										
CWT 10/43/14, 10/43/15, 10/43/16 n = 61,827	1	2	2	21	12	0				38
1992-E. Fork Stock										
CWT 10/44/20 n = 20,721	0	2	1							3
Dworshak Stock										
CWT 10/44/18, 10/44/19 n = 43,139	0	0	0							0

<sup>a</sup> Includes one return to Pahsimeroi Hatchery.

TABLES-H

one ocean-year and 400 after two ocean-years (Ball 1996) (Table 20). The total return is 632 (0.34%) which includes an estimated 50% escapement past the fishery.

#### **Off-site Releases**

Off-site releases (smolt releases into the river or into tributaries without means or attempts to collect spawning adults) is a technique employed to distribute the harvest and put more hatchery fish into anglers' creels. Lower Salmon River harvest areas are corridors for all fish destined upriver. However, because these lower river sections have been unable to sustain a viable fishery after upriver fish have passed, off-site releases have been employed there. Smolt releases into the Salmon River at Hammer Creek in 1991 did not contain any CWT's, so harvest distribution has not been ascertained. Adult returns have been estimated from the performance of CWT groups released in the Little Salmon River. If this release site is going to receive fish every year, a representative CWT group should be included to ascertain adult returns and harvest distribution. Two years of marked releases should suffice.

In 1990, smolt releases in the Salmon River at Ellis Bridge and near the mouth of the North Fork Salmon River were also without representative mark groups. Adult returns were estimated from marked groups released nearby. Again in 1991, releases in the Salmon River at Shoup Bridge were also without representative mark groups. Returns were estimated by using CWT groups reared by Idaho Power's steelhead mitigation program and released at the Pahsimeroi Hatchery.

In 1988, evaluation of in-river releases began with marked fish releases at Shoup Bridge, about 8 km upstream of the city of Salmon. There were no marked LSRCP releases that year, but estimated returns were derived from a companion group of marked fish from Niagara Springs Fish Hatchery (Ball 1992b). In 1989, all in-river releases, both marked and unmarked, were reared at Niagara Springs Fish Hatchery (Ball 1996). In 1990, the fish released at Shoup Bridge were LSRCP-reared fish from Hagerman National Fish Hatchery. From 45,828 marked fish and 154,418 unmarked fish released, anglers harvested an estimated 147 fish. The harvest rate of 0.07% after two ocean-years is less than the 0.12% reported for the 1988 release after two ocean-years (Ball 1992b). More than half of the harvest was taken from section 15 (Ball 1996). The relatively small harvest from near the release site may be due to the change in river morphology during successive drought years since 1986. The stream reach below the Shoup Bridge release site has less holding water for fish since the drought began. In 1991, 97,800 unmarked A-strain smolts from Magic Valley Steelhead Hatchery were released at Shoup Bridge (Table 20). In 1992-93, 220 adults returned, of which 214 were harvested (Ball 1996). In 1993-94, 189 additional adult returns were estimated. The total return was 409 (0.42%), of which 346 (85%) were harvested.

Although no marked LSRCP fish were released in the Salmon River at North Fork or Ellis Bridge, there has been an increase in both effort and harvest near these release sites. Both of these reaches have large, long pools downstream of their release sites. Harvested numbers of CWT'ed fish raised by IPC and released at North Fork and Ellis Bridge are reported in Appendix B. Performance of these groups, especially the North Fork release, illustrates the value of off-site releases as a tool to improve harvest opportunity and angler distribution.

### **Hatchery Straying**

Adult steelhead returning to Idaho rivers in the fall are several months away from spawning and commonly wander into streams other than where they were released. It is not unusual for these wandering fish to spend time in one or more rivers that are not their natal or release drainage. Adults observed or harvested during the wandering phase should not be considered strays. The majority of them would eventually return to their natal stream, hatchery, or release site.

In 1994, there were 351 coded wire tags recovered from hatchery steelhead at hatchery racks in Idaho, excluding Hells Canyon. In addition to Idaho CWT'ed fish, two fish marked with CWT's by National Marine Fisheries Service (NMFS) personnel were recovered in spring 1994 at Idaho hatchery racks. Since these NMFS-tagged smolts originate from throughout the Snake River drainage and are marked during their juvenile migration downstream, it is not unusual to recover some of these NMFS-tagged fish at Idaho hatchery racks.

There were four strays of LSRCP fish tagged by Washington that were collected at Dworshak National Fish Hatchery. Three were from releases in the Tucannon River (63/14/44 and 63/14/52), and one was from a Touchet River release (63/40/59). Straying rates for these groups were reported by Washington.

Off-site releases that return to areas without spawning gravel may enter hatchery racks and are included in the number of CWT's recovered there. In 1994, there were six CWT's recovered at the Pahsimeroi Hatchery from the off-site release at Ellis Bridge. Although technically these marked fish strayed from their release location, we are not including them in this straying evaluation between hatchery racks. The Ellis Bridge release site is located 0.7 km from the mouth of the Pahsimeroi River.

Of the 113 CWT's recovered from hatchery releases in the Salmon River drainage, only one fish (0.88%) strayed to another rack. This B-strain fish was tagged with CWT 10/43/22 and released in the East Fork Salmon River in 1991. It returned to the trap on the Pahsimeroi River. This year's straying rate is slightly higher than the range of straying rates (0.2-0.6%) reported since 1985 (Ball 1986, 1988, 1989, 1990, 1992a, 1992b, 1996). There is very little variation between years or through time in the years we have been calculating straying rates between hatchery racks.

### **Tributary Straying**

Electrofishing surveys in 1994 were qualitative and should not be considered a reflection of total straying rates of either hatchery or off-site releases. Electrofishing surveys in 1994 were conducted to assess the relative distribution of adult steelhead spawning in upper Salmon River tributaries. Since these surveys concentrated on only 16 streams where adult fish were found, the results should not be considered a reflection of total straying rates of either hatchery or off-site releases. In addition to fish from off-site releases found spawning in tributaries, we also found fish released from hatchery racks that were observed spawning in the river and side streams below their release sites. This was especially evident in the upper Salmon River downstream from Sawtooth Hatchery. The amount of straying, and possibly the distribution of steelhead, could be a function of lower flows and higher water temperatures during the drought cycle which began in 1987.

A true quantitative analysis of straying would require weirs and very intensive electrofishing surveys over many miles of a large number of streams.

Straying of hatchery fish released from Idaho racks as documented by CWT's has been consistently low, but it is not a good indication of the number of adult steelhead straying into tributary streams (Ball 1986, 1989, 1992a, 1992b, 1996). Even without a quantitative straying analysis, it appears that a much larger proportion of adults are spawning in tributaries than stray to a hatchery rack other than where they were released.

Although we handled a small number of wild-natural steelhead, their time of arrival into the tributaries corresponded closely with hatchery fish. In 1994, we started the surveys in early March to see if any wild-natural fish might be arriving prior to early April -- when we first observed adult spawners in 1993. Since we did not find any fish until March 29, there did not appear to be very much difference between years. We also attempted to document the end of the spawning season, but high water impeded our ability to continue the surveys past mid-May. If there were any wild fish spawning in the streams we surveyed, they could still have been spawning in June. As in 1993, we observed both hatchery and wild-natural groups of fish entering the streams when males were ripe and females gravid. Spawning began soon after entry into the streams and the fish left when spawning was complete. Some males returned to the river and then reentered the tributary with another female. We did not attempt to document contribution of hatchery steelhead to natural production in these tributaries.

### **Sources of Error**

The primary sources of error involved in the steelhead harvest estimates have been discussed previously by Ball (1986), as well as the quality control of adipose clipping (Ball 1989).

Left ventral fin clips, which are used on steelhead to identify the presence of CWT's, may regenerate but nonetheless leave the fin deformed. Since there is a high proportion of hatchery fish with deformed fins from their life in the hatchery, we attempt to take snouts from all fish with deformed left ventral fins. Although we take additional snouts with these methods, we should not be missing very many CWT's. Spot checks at hatcheries with portable CWT detectors have confirmed that our methods detect greater than 98%- of CWT'ed fish.

The number of marked fish in each release group and the number of groups released each depend on many factors, but generally have been adjusted to produce adequate adult returns under average conditions. Several consecutive low water years and poor migration survival of both juveniles migrating downstream and adults returning upstream have resulted in several poor steelhead runs in the Salmon River. Consequently, the chance of recovering marked fish becomes very low and the accuracy of return information diminishes. Harvest patterns, exploitation rates, age at return, and other reasonably stable statistics have been aberrant.

It is impossible to predict when poor migration conditions will occur in order to mark more fish to compensate for poor survival. The reasoning to mark enough fish with average return expectations is still sound, but may not produce sufficient results in very low return years.

### **RECOMMENDATIONS**

Continue to include coded wire tags in each major smolt release that are representative in size, time of release, and fish health.

Continue to evaluate rate of return, contribution to the sport fishery, and distribution of adults returning from off-site releases.

Set up check stations in Salmon River Sections 17 and 18 to improve manpower efficiency and to increase the number of fish checked.

Survey upper Salmon River tributaries to document presence or absence of off-site releases.

Formulate a marking program for PIT tag evaluation of adult returns to Lower Granite Dam.

Coded wire tag 60,000 fish each year for two release years for the release in the Salmon River at Hammer Creek.

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## **APPENDICES**

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Appendix A. Total number of steelhead by section and month harvested by resident and nonresident anglers, fall 1993 and spring 1994<sup>a</sup>

Fall 1993 Steelhead Harvest					
River Section	September	October	November	December	Total
01	209	706	1438	497	2,850
02	2'61	431	457	118	1,267
Snake Totals	470	1137	1895	614	4,116
03	575	2483	2039	876	5,973
04	13	287	196	131	627
05	26	131	52	13	222
06	0	52	0	0	52
07	13	26	13	0	52
Clearwater Totals	627	2,979	2,300	1,020	6,926
10	131	771	222	91	1,215
11	170	353	287	222	1,032
12	0	223	209	52	484
13	0	131	0	0	131
14	26	327	196	26	575
15	118	731	314	65	1,228
16	39	170	65	0	274
17	0	66	39	0	105
18	0	0	52	0	52
19	0	0	0	0	0
20	105	39	13	0	157
Salmon Totals	589	2,811	1,398	456	5,254
Oxbow	0	0	0	0	0
Boise	0	0	0	0	0
Payette	0	0	0	0	0
Statewide Totals	1,686	6,927	5,593	2,091	16,296

Appendix A. Continued.

Spring 1994 Steelhead Harvest						
River Section	January	February	March	April	Total	
01	485	333	106	15	939	
02	76	45	136	106	363	
Snake Totals	561	378	242	121	1,302	
03	2,273	1,712	1,091	91	5,167	
04	45	152	167	0	364	
05	106	182	621	61	970	
06	45	0	0	61	106	
07	30	45	91	364	530	
Clearwater Totals	2,499	2,091	1,970	577	7,137	
10	455	227	61	30	773	
11	273	258	561	45	1,137	
12	136	76	152	91	455	
13	15	0	61	0	76	
14	45	45	515	76	681	
15	0	91	1,682	318	2,091	
16	91	76	182	273	622	
17	76	242	379	439	1,136	
18	0	0	121	288	409	
19	0	0	61	288	349	
20	167	0	212	758	1,137	
Salmon Totals	1,258	1,015	3,987	2,606	8,866	
Oxbow	0	0	0	15	15	
Boise	0	15	91	227	333	
Payette	0	0	0	0	0	
Statewide Totals	4,317	3,499	6,290	3,547	17,653	

<sup>a</sup> Statewide harvest survey data (unpublished). 45

## 45

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Appendix B. Continued.

TAG CODE - 05/20/48			RELEASE SITE - North Fork Clearwater R.									NUMBER RELEASED- 20,888			
			September			October			November			December			
No.			Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.		
River	Section	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Taos	Rate	Harv.		
	01														
	03/05				1	0.058	17								
	04/06														
	n7														
	10														
	11														
	12														
	13														
	14														
	15														
	16														
	17														
No.			January		No.	February		No.	March		No.	April		1993-94	
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No.	Est.
River	Section	Taos	Rate	Harv.	Taos	Rate	Harv.	Tags	Rate	Harv.	Taos	Rate	Harv.	Taos	Harv.
	01														
	03/05	1	0.077	13										2	30
	04/06														
	07														
	10														
	11														
	12														
	13														
	14														
	15														
	16														
	17														
	18														
	19														
	20														
Total estimated harvest															30

Appendix B. Continued.

TAG CODE - 05/24/24				RELEASE SITE - Clearwater R.						NUMBER RELEASED - 19,773								
				September			October			November			December					
No.				Sample	Est.	No.			Sample	Est.	No.			Sample	Eat.			
River	Section	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.		
	01							1	0.048	21								
	03/05							1	0.057	18								
	04/06																	
	07																	
	10																	
	11																	
	12																	
	13																	
	14																	
	15																	
No.				January			February			March			April			1993-94		
Sample				Est.	Sample			Est.	Sample			Est.	Sample			Est.	Eat.	
River	Section	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Harv.
	01															1		21
	03/05				2	0.064	31	1	0.051	20						4		69
	04/06																	
	07																	
	10																	
	11																	
	12																	
	13																	
	14																	
	15																	
	16																	
	17																	
	18																	
	19																	
	20																	
Total estimated harvest																		90

Appendix B. Continued.

TAG CODE - 05/24/25				RELEASE SITE - Clearwater R.								NUMBER RELEASED - 20,320			
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01												1	0.069	14	
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.
01															
03/05					1	0.064	16						2		30
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
Total estimated harvest															30

Appendix B. Continued.

TAG CODE - 05/24/27				RELEASE SITE - Clearwater R.							NUMBER RELEASED - 19,515				
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01											1	0.069	14		
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Eat. Harv.
01															
03/05													1		14
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
Total estimated harvest														14	

Appendix B. Continued.

TAG CODE - 05/24/28				RELEASE SITE - Clearwater R.						NUMBER RELEASED - 20,547			
		September		October		November		December					
		No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.				
River	Section	Taos	Rate	Harv.	Taos	Rate	Harv.	Taos	Rate	Harv.	Taos	Rate	Harv.
01													
03/05					2	0.058	34	3	0.057	53			
04/06													
n7													
10													
11													
12													
13													
14													
15													
16													
17													
		January		February		March		April		1993-94			
		No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Est.		
River	Section	Taos	Rate	Harv.	Taos	Rate	Harv.	Taos	Rate	Harv.	Taos	Rate	Harv.
01													
03/05		3	0.077	39								8	126
04/06													
07													
10													
11													
12													
13													
14													
15													
16													
17													
18													
19													
20													
Total estimated harvest											113		



Appendix B. Continued.

TAG CODE - 05/24/29				RELEASE SITE - Clearwater R.						NUMBER RELEASED - 20,499					
River	Section	No. Tags	September		No. Tags	October		No. Taps	November		No. Tags	December			
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01															
03/05					3	0.058	52				2	0.069	29		
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.
01															
03/05		1	0.077	13	1	0.064	16							7	110
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
Total estimated harvest															110

Appendix B. Continued.

TAG CODE - 05/24/30			RELEASE SITE - Clearwater R.						NUMBER RELEASED - 20,293					
River	Section	Tags	September		No.	October		No.	November		No.	December		
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	
			Rate	Harv.	Tags	Rate	Harv.	Taps	Rate	Harv.	Tags	Rate	Harv.	
	01													
	03/05													
	04/06													
	07													
	10													
	11													
	12													
	13													
	14													
	15													
	16													
River	Section	Tags	January		No.	February		No.	March		No.	April		1993-94
			Sample	Eat.		Sample	Eat.		Sample	Est.		Sample	Est.	
			Rate	Harv.	Tags	Rate	Harv.	Taps	Rate	Harv.	Tags	Rate	Harv.	Tags Harv.
	01													
03/05		1	0.077	13				1	0.051	20			2	33
	04/06													
	07													
	10													
	11													
	12													
	13													
	14													
	15													
	16													
	17													
	18													
	19													
	20													
Total estimated harvest														33

Appendix B. Continued.

TAG CODE - 07/53/45			RELEASE SITE - Umatilla R. @ Meacham Cr.										NUMBER RELEASED - 9,458			
River Section	Tags	September		No. Tags	October		No. Tags	November		No. Tags	December					
		Sample	Eat.		Sample	Est.		Sample	Est.		Sample	Eat.				
		Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.				
01				1	0.064	16										
03/05																
04/06																
07																
10																
11																
12																
13																
14																
15																
16																
17																
River Section	Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94			
		Sample	Eat.		Sample	Est.		Sample	Est.		Sample	Eat.	No.	Eat.		
		Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	Tags	Harv.		
01													1		16	
03/05																
04/06																
07																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																
Total estimated harvest																

Appendix B. Continued.

TAG CODE - 07/53/53				RELEASE SITE - Wallowa R.				@ Big canyon Cr.				NUMBER RELEASED - 26,713				
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December				
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.			
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.			
03/05	01	1	0.033	30	1	0.064	16	1	0.048	21						
	04/06															
	07															
	10															
	11															
	12															
	13															
	14															
	15															
	16															
	17															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94		
			Sample	Eat.		Sample	Eat.		Sample	Eat.		Sample	Est.	No.	Est.	
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	Tags	Harv.	
	01												2		37	
03/05													2		47	
	04/06															
	07															
	10															
	11															
	12															
	13															
	14															
	15															
	16															
	17															
	18															
	19															
	20															
Total estimated harvest																84

Appendix B. Continued.

TAG CODE - 07/53/54				RELEASE SITE - Wallowa R.						NUMBER RELEASED - 24,751					
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01								1	0.048	21					
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.
01													1		21
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
Total estimated harvest															21

Appendix B. Continued.

TAG CODE - 07/53/56			RELEASE SITE - Imnaha R. @ Little Sheep Cr.							NUMBER RELEASED - 19,516					
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample Rate	Eat. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
03/05	01	1	0.033	30											
	04/06														
	07														
	10														
	11														
	12														
	13														
	14														
	15														
	16														
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.
03/05	01													1	30
	04/06														
	07														
	10														
	11														
	12														
	13														
	14														
	15														
	16														
	17														
	18														
	19														
	20														
Total estimated harvest															30



Appendix B. Continued.

TAG CODE - 07/53/60

RELEASE SITE - Wallowa R.

NUMBER RELEASED - 28,018

River Section Taps	No.	September		No.	October		No.	November		No.	December			
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01														
03/05				1	0.058	17								
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
River Section Taps	No.	January		No.	February		No.	March		No.	April		1993-94	
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Taps	Est. Harv.
01														
03/05												1		17
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														
Total estimated harvest														17



Appendix B. Continued.

TAG CODE - 07/54/43

RELEASE SITE - Wallowa R.

NUMBER RELEASED - 28,815

River	Section	No. Tags	September		No. Taos	October		No. Tags	November		No. Taos	December			
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
	01							1	0.048	21					
	03/05														
	04/06														
	07														
	10														
	11														
	12														
	13														
	14														
	15														
	16														
River	Section	No. Tags	January		No. Taos	February		No. Tags	March		No. Taos	April		1993-94	
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.
	01													1	21
	03/05														
	04/06														
	07														
	10														
	11														
	12														
	13														
	14														
	15														
	16														
	17														
	18														
	19														
	20														

Total estimated harvest

Appendix B. Continued.

TAG CODE - 10/15/30				RELEASE SITE - Sawtooth Hatchery							NUMBER RELEASED - 53,463				
River Section	No. Tags	September		No. Tags	October		No. Taps	November		No. Tags	December				
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.			
01															
03/05															
04/06															
07															
10				1	0.581	2									
12															
13															
14															
15															
16															
17															
	No.	January		No. Taps	February			March		No. Tags	April		1993-94		
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.	
01															
03/05															
04/06															
07															
10															
11															
12														1	2
13															
14															
15															
16															
17				1	0.004	250								1	250
18															
19										1	0.080	13	1		13
20															
Total estimated harvest															265

Appendix B. Continued.

TAG CODE - 10/40/07				RELEASE SITE - Sawtooth Hatchery									NUMBER RELEASED - 45,646			
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December				
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.			
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.			
01																
03/05																
04/06																
07																
10																
11																
12																
13																
14																
15																
16																
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94		
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No. Tags	Est.	
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.			
01																
03/05																
04/06																
07																
10																
11																
12																
13																
14																
15								1	0.203	5				1	5	
16																
17																
18																
19																
20																
		Total estimated harvest														5

Appendix B. Continued.

TAG CODE - 10/40/58

RELEASE SITE - East Fork Salmon R.

NUMBER RELEASED - 40,905

River	Section	No. Taos	September		No. Taos	October		No. Tags	November		No. Taos	December			
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
	01														
	03/05														
	04/06														
	07														
	10														
	11														
	12														
	13														
	14														
	15														
	16														
River	Section	No. Taos	January		No. Taos	February		No. Taos	March		No. Tags	April		1993-94	
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.
	01														
	03/05														
	04/06														
	07														
	10														
	11														
	12							1	0.118	8			1		8
	13														
	14														
	15														
	16														
	17														
	18														
	19														
	20														
Total estimated harvest															8

Appendix B. Continued.

TAG CODE - 10/42/16			RELEASE SITE - Sawtooth Hatchery									NUMBER RELEASED - 15,218			
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No.	Est.
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	Tags	Harv.
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18												1	0.205	5	1 5
19															
20															
Total estimated harvest															5

Appendix B. Continued.

TAG CODE - 10/42/38			RELEASE SITE - East Fork Salmon R.									NUMBER RELEASED - 14,958			
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
	01														
	03/05														
	04/06														
	07														
	10														
	11														
	12														
	13														
	14														
	15				1	0.148	7								
	16														
	17														
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No. Tags	Est. Harv.
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
	01														
	03/05														
	04/06														
	07														
	10														
	11														
	12														
	13														
	14														
	15													1	7
	16														
	17														
	18														
	19														
	20														
Total estimated harvest															7

Appendix B. Continued.

TAG CODE - 10/43/14			RELEASE SITE - East Fork Salmon R.									NUMBER RELEASED - 20,498			
River	Section	No. Tags	September		No. Taos	October		No. Tags	November		No. Tags	December			
			Sample	Eat.		Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16			January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
17			Sample	Eat.		Sample	Eat.		Sample	Est.		Sample	Eat.	No. Tags	Est. Harv.
		No.	Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate			
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15								1	0.203	5				1	5
16															
17															
18											1	0.205	5	1	5
19															
20															
Total estimated harvest															10

Appendix B. Continued.

TAG CODE - 10/43/15

RELEASE SITE - East Fork Salmon R.

NUMBER RELEASED - 21,017

River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
	01							1	0.048	21					
	03/05							1	0.057	18					
	04/06								0.105						
	07								March						
	10														
	11														
	12														
	13							1		10					
	14														
	15														
	16														
	17														
		No.	January		No.	February		No.			No.	April	1993-94		
			Sample Rate	Est. Harv.	Tags	Sample Rate	Est. Harv.	Tags	Sample Rate	Est. Harv.	Tags	Sample Rate	Est. Harv.	No. Tags	Est. Harv.
	01													1	21
	03/05													1	18
	04/06														
	07														
	10														
	11														
	12														
	13														
	14														
	15							2	0.203	10				3	20
	16														
	17														
	18										1	0.205	5	1	5
	19														
	20														
Total estimated harvest															64



## 89

89

89

89

89

Appendix B. Continued.

TAG CODE - 10/43/17

RELEASE SITE - Little Salmon R.

NUMBER RELEASED - 21,809

River Section	No. Taos	<u>September</u>		<u>October</u>		No. Tags	<u>November</u>		No. Tags	<u>December</u>			
		Sample	Est.	Sample	Est.		Sample	Eat.		Sample	Eat.		
		Rate	Harv.	Tags	Rate	Harv.	Rate	Harv.	Tags	Rate	Harv.		
01													
03/05													
04/06													
07													
10													
11													
12													
13													
14													
15													
16													
17													
	No.	<u>January</u>		<u>February</u>		No. Tags	<u>March</u>		No. Tags	<u>April</u>		<u>1993-94</u>	
		Sample	Est.	Sample	Est.		Sample	Eat.		Sample	Est.	No. Harv.	Est. Harv.
		Rate	Harv.	Tags	Rate	Harv.	Rate	Harv.	Tags	Rate			
01													
03/05													
04/06													
07													
10													
11													
12						1	0.118	8				1	8
13													
14													
15						1	0.203	5				1	5
16													
17													
18													
19													
20						1	0.316	3	1	0.204	5	2	8
Total estimated harvest												21	

Appendix B. Continued.

TAG CODE - 10/43/18

RELEASE SITE - Little Salmon R.

NUMBER RELEASED - 22,704

River Section	Tags	<u>September</u>		Tags	<u>October</u>		Tags	<u>November</u>		Tags	<u>December</u>			
		No.	Sample Est.		No.	Sample Est.		No.	Sample Est.		No.	Sample Est.		
		Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
		<u>January</u>		Tags	<u>February</u>		Tags	<u>March</u>		Tags	<u>April</u>		<u>1993-94</u>	
		No.	Sample Est.		No.	Sample Est.		No.	Sample Est.		No.	Sample Est.	No.	Eat.
		Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	Tags	Harv.
01														
03/05														
04/06														
07														
10														
11														
12				1	0.053	19	1	0.118	8				2	27
13														
14														
15														
16														
17														
18														
19														
20										2	0.204	10	2	10
Total estimated harvest														37

Appendix B. Continued.

TAG CODE - 10/43/19 RELEASED - 21,484				RELEASE						SITE - Little Salmon R.			NUMBER			
				September		October		November		December						
No.				Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.		
River Section Tags				Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.		
01																
03/05																
04/06																
07																
10																
11																
12																
13																
14																
15																
16																
No.				January		No.	February		No.	March		No.	April			
				Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
River Section Tags				Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.		
01																
03/05																
04/06																
07																
10																
11																
12									1	0.118	8		1		8	
13																
14																
15																
16																
17																
18																
19																
20												1	0.204	5	1	5
Total estimated harvest																13

Appendix B. Continued.

TAG CODE - 10/43/20			RELEASE SITE - East Fork Salmon R.							NUMBER RELEASED - 22,525					
River	Section	No. Taps	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample Rate	Eat. Harv.		Sample Rate	Eat. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01															
03/05															
04/06															
07															
10															
11								1	0.176	6					
12															
13															
14															
15															
16															
17															
		No.													
01															
03/05															
04/06															
07															
10															
11															
12													1	6	
13															
14															
15								2	0.203	10			2	10	
16															
17															
18															
19															
20															
Total estimated harvest															16

Appendix B. Continued.

TAG CODE - 10/43/21

RELEASE SITE - East Fork Salmon R.

NUMBER RELEASED - 22,483

River Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December		
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	
01													
03/05													
04/06													
07													
10													
11													
12													
13							1	0.168		6			
14													
15													
16		January	Est.	No. Tags	February	No. Tags	March	No. Tags	April	1993-94			
17		Sample Rate	Harv.		Sample Rate		Est. Harv.		Sample Rate	Est. Harv.	Sample Rate	Est. Harv.	No. Tags
01		No.											
03/05													
04/06													
07													
10													
11													
12													
13													
14											1	6	
15													
16													
17													
18													
19													
20													
Total estimated harvest												6	

Appendix B. Continued.

TAG CODE - 10/43/22

RELEASE SITE - East Fork Salmon R.

NUMBER RELEASED - 21,375

River Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01														
03/05														
04/06														
07														
10		1			0.060	17								
11		1			0.581	2								
12														
13														
14		1			0.148	7								
15														
16		January		February			March			April		1993-94		
17	No.	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Eat. Harv.
01														
03/05														
04/06														
07														
10														
11													1	17
12													1	2
13														
14														
15							4	0.203	20				5	27
16														
17														
18										1	0.205	5	1	5
19														
20														
Total estimated harvest														51

Appendix B. Continued.

TAG CODE - 10/43/23

RELEASE SITE - Pahsimeroi R.

NUMBER RELEASED - 20,550

River Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16		January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
17		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.
01	No.													
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16								1	0.066	15			1	15
17								1	0.066	15			1	15
18														
19														
20														
Total estimated harvest														30



Appendix B. Continued.

TAG CODE - 10/43/24

RELEASE SITE - Salmon R. @ North Fork

NUMBER RELEASED - 21,605

River Section	No. Taos	September		No. Taos	October		No. Taos	November		No. Taos	December				
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.			
01															
03/05															
04/06															
07															
10															
11															
12															
13				2	0.148	14									
14															
15															
16		January		No. Taos	February		No. Taos	March		No. Taos	April		1993-94		
17	No.	Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.	
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15							2	0.203	10	1	0.066	15	5	39	
16							1	0.066	15				1	15	
17															
18															
19															
20															
Total estimated harvest															54

Appendix B. Continued.

TAG CODE - 10/43/25

RELEASE SITE - Salmon R. @ North Fork

NUMBER RELEASED - 23,782

River Section	No. Tags	September		October		No. Tags	November		December					
		Sample Rate	Est. Harv.	No. Taos	Sample Rate		Est. Harv.	Sample Rate	Est. Harv.	No. Taos	Sample Rate	Est. Harv.		
01														
03/05														
04/06														
07														
10														
11				1	0.581	2								
12														
13														
14														
15														
16		January		February		No. Tags	March		April		1993-94			
17		Sample Rate	Eat. Harv.	No. Taos	Sample Rate		Est. Harv.	Sample Rate	Est. Harv.	No. Taos	Sample Rate	Est. Harv.	No. Tags	Est. Harv.
01	No.													
03/05														
04/06														
07														
10														
11														
12												1	2	
13														
14						1	0.027	37				1	37	
15						5	0.203	25				5	25	
16														
17														
18														
19														
20														
Total estimated harvest													64	

Appendix B. Continued.

TAG CODE - 10/43/26

RELEASE SITE - Salmon R. @ North Fork

NUMBER RELEASED - 22,244

River	Section	No. Tags	September		No. Taps	October		No. Tags	November		No. Taps	December			
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01															
03/05															
04/06															
07															
10					1	0.581	2								
11															
12															
13					1	0.148	7								
14															
15															
16															
17															
		No.	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No.	Est.
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	Tags	Harv.
01		No.													
03/05															
04/06															
07															
10															
11															
12														1	2
13															
14															
15								5	0.203	25				6	32
16															
17															
18															
19															
20															
Total estimated harvest															34

Appendix B. Continued.

TAG CODE - 10/43/27

RELEASE SITE - Pahsimeroi R.

NUMBER RELEASED - 22,328

River	Section	No. Taos	September		No. Taos	October		No. Taos	November		No. Taos	December			
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01															
03/05															
04/06															
07						0.581									
10						0.148		1	0.094	11					
11					1	February	2								
12															
13															
14					1		7								
15															
16															
17															
		No.	January		No.			No.	March		No.	April		1993-94	
			Sample	Eat.	Taos	Sample	Est.	Tags	Sample	Eat.	Taos	Sample	Est.	No.	Eat.
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	Taos	Harv.
01															
03/05															
04/06															
07															
10															
11														1	11
12														1	2
13															
14															
15								2	0.203	10				3	17
16					1	0.053	19							1	19
17															
18															
19															
20															
Total estimated harvest															49

Appendix B. Continued.

TAG CODE - 10/43/28

RELEASE SITE - Pahsimeroi R.

NUMBER RELEASED - 22,395

River	Section	No. Tags	<u>September</u>		No. Tags	<u>October</u>		No. Tags	<u>November</u>		No. Tags	<u>December</u>			
			<u>Sample</u>	<u>Eat.</u>		<u>Sample</u>	<u>Eat.</u>		<u>Sample</u>	<u>Est.</u>		<u>Sample</u>	<u>Est.</u>		
			<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		
01															
03/05															
04/06															
07															
10															
11								1	0.176	6					
12															
13															
14															
15															
16			<u>January</u>		No. Tags	<u>February</u>		No. Tags	<u>March</u>		No. Tags	<u>April</u>		<u>1993-94</u>	
17			<u>Sample</u>	<u>Est.</u>		<u>Sample</u>	<u>Est.</u>		<u>Sample</u>	<u>Est.</u>		<u>Sample</u>	<u>Est.</u>	<u>No.</u>	<u>Eat.</u>
			<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>	<u>Harv.</u>	<u>Tags</u>
01		No.													
03/05															
04/06															
07															
10															
11															
12														1	6
13															
14															
15								1	0.203	5				1	5
16															
17											1	0.116	9	1	9
18															
19															
20															
Total estimated harvest															20

Appendix B. Continued.

TAG CODE - 10143/29

RELEASE SITE - Salmon R. @ Ellis Bridge

NUMBER RELEASED - 23,280

River Section	Taps	September		No. Tags	October		No. Tags	November		No. Tags	December			
		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01														
03/05														
04/06														
07														
10														
11														
12				2	0.242	8								
13														
14														
15														
16		January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
17		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Taps	Est. Harv.
01	No.													
03/05														
04/06														
07														
10														
11														
12														
13														
14													2	8
15								1	0.203	5			1	5
16														
17														
18														
19														
20														
Total estimated harvest													13	

Appendix B. Continued.

TAG CODE - 10/43/30

RELEASE SITE - Salmon R. @ Ellis Bridge

NUMBER RELEASED - 22,388

River Section	No. Tags	<u>September</u>		No. Tags	<u>October</u>		No. Tags	<u>November</u>		No. Tags	<u>December</u>			
		<u>Sample Est.</u>	<u>Harv.</u>		<u>Sample Est.</u>	<u>Harv.</u>		<u>Sample Est.</u>	<u>Harv.</u>		<u>Sample Est.</u>	<u>Harv.</u>		
		Rate			Rate			Rate			Rate			
01														
03/05														
04/06														
07														
10														
11														
12								1	0.221		5			
13								2	0.168		12			
14				1	0.148	7		1	0.105		10			
15														
River Section	No. Tags	<u>January</u>		No. Tags	<u>February</u>		No. Tags	<u>March</u>		No. Tags	<u>April</u>		<u>1993-94</u>	
		<u>Sample Est.</u>	<u>Harv.</u>		<u>Sample Est.</u>	<u>Harv.</u>		<u>Sample Est.</u>	<u>Harv.</u>		<u>Sample</u>	<u>Eat.</u>	<u>No.</u>	<u>Est.</u>
		Rate			Rate			Rate			Rate		Harv.	Tags
01														
03/05														
04/06														
07														
10														
11														
12														
13													1	5
14													2	12
15													2	17
16														
17														
18										1	0.116	9	1	9
19										2	0.205	10	2	10
20														
Total estimated harvest														53

Appendix B. Continued.

TAG CODE - 10/43/31

RELEASE SITE - Salmon R. @ Ellis Bridge

NUMBER RELEASED - 21,826

River Section	Tags	September		Tags	October		Tags	November		Tags	December			
		No. Sample	Est. Rate		No. Sample	Est. Rate		No. Sample	Est. Rate		No. Sample	Est. Rate		
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14							1	0.105	10					
15														
16														
River Section	Tags	January		Tags	February		Tags	March		Tags	April		1993-94	
		No. Sample	Est. Rate		No. Sample	Est. Rate		No. Sample	Est. Rate		No. Sample	Est. Rate	No. Sample	Est. Rate
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15							3	0.203	15				4	25
16														
17														
18														
19														
20														
Total estimated harvest														25



Appendix B. Continued.

TAG CODE - 10/43/32

RELEASE SITE - Little Salmon R.

NUMBER RELEASED - 19,831

			<u>September</u>			<u>October</u>			<u>November</u>			<u>December</u>		
			No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.
River	Section	Tags		Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.
	01													
	03/05													
	04/06													
	07													
	10													
	11													
	12					1	0.581	2						
	13													
	14													
	15													
	16													
	17													
			No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Eat.	No.	Sample	Eat.
River	Section	Tags		Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.
	01													
	03/05													
	04/06													
	07													
	10													
	11													
	12													
	13													
	14													
	15													
	16													
	17													
	18													
	19													
	20								1	0.316	3	2	0.204	10
Total estimated harvest														15

Appendix B. Continued.

TAG CODE - 10/43/33

RELEASE SITE - Sawtooth Hatchery

NUMBER RELEASED - 21,050

River	Section	No. Taps	September		October		No. Taps	November		No. Taps	December			
			Sample	Est.	Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.	Taps	Rate	Harv.	Rate	Harv.		Rate	Harv.		
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
River	Section	No. Taps	January		February		No. Taps	March		No. Tags	April		1993-94	
			Sample	Est.	Sample	Est.		Sample	Est.		Sample	Est.	No.	Est.
			Rate	Harv.	Taps	Rate	Harv.	Rate	Harv.		Rate	Harv.	Tags	Harv.
01														
03/05														
04/06														
07														
10														
11										1	0.037	27	1	27
12														
13														
14														
15										4	0.203	20	4	20
16														
17														
18														
19														
20										1	0.080	13	1	13
Total estimated harvest														60

Appendix B. Continued.

TAG CODE - 10/43/34

RELEASE SITE - Sawtooth Hatchery

NUMBER RELEASED - 20,129

River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01															
03/05															
04/06															
07															
10															
11					1	0.581	2	1	0.176	6					
12															
13															
14															
15															
16			January			February			March			April		1993-94	
17			Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Sample Rate	Est. Harv.	No. Tags	Est. Harv.
01		No.													
03/05															
04/06															
07															
10															
11															
12														2	8
13															
14															
15								1	0.203	5				1	5
16															
17															
18															
19											1	0.080	13	1	13
20															
Total estimated harvest															26

Appendix B. Continued.

TAG CODE - 10/43/35

RELEASE SITE - Sawtooth Hatchery

NUMBER RELEASED - 12,066

			<u>September</u>			<u>October</u>			<u>November</u>			<u>December</u>		
	<u>No.</u>		<u>Sample</u>	<u>Eat.</u>		<u>No.</u>	<u>Sample</u>	<u>Est.</u>	<u>No.</u>	<u>Sample</u>	<u>Est.</u>	<u>No.</u>	<u>Sample</u>	<u>Est.</u>
<u>River</u>	<u>Section</u>	<u>Tags</u>	<u>Rate</u>	<u>Harv.</u>		<u>Tags</u>	<u>Rate</u>	<u>Harv.</u>	<u>Tags</u>	<u>Rate</u>	<u>Harv.</u>	<u>Tags</u>	<u>Rate</u>	<u>Harv.</u>
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
	<u>No.</u>		<u>January</u>			<u>February</u>			<u>March</u>			<u>April</u>		
	<u>Sample</u>	<u>Est.</u>	<u>Rate</u>	<u>Harv.</u>		<u>Sample</u>	<u>Est.</u>		<u>Sample</u>	<u>Est.</u>		<u>Sample</u>	<u>Est.</u>	
<u>River</u>	<u>Section</u>	<u>Tags</u>	<u>Rate</u>	<u>Harv.</u>		<u>Tags</u>	<u>Rate</u>	<u>Harv.</u>	<u>Tags</u>	<u>Rate</u>	<u>Harv.</u>	<u>Tags</u>	<u>Rate</u>	<u>Harv.</u>
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15									2	0.203	10			2
16														10
17												1	0.116	9
18														1
19														9
20														

Total estimated harvest

Appendix B. Continued.

<u>TAG CODE - 10/43/36</u>			<u>RELEASE SITE - Sawtooth Hatchery</u>							<u>NUMBER RELEASED - 21,775</u>					
River	Section	No. Tags	<u>September</u>		No. Taps	<u>October</u>		No. Taps	<u>November</u>		No. Taps	<u>December</u>			
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01															
03/05															
04/06															
07															
10															
11															
12															
13					1	0.148	7								
14															
15															
16			<u>January</u>		No. Taps	<u>February</u>		No. Taps	<u>March</u>		No. Tags	<u>April</u>		<u>1993-94</u>	
17			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.
01		No.													
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15														1	7
16															
17															
18															
19											1	0.080	13	1	13
20															
Total estimated harvest															20

Appendix B. Continued.

<u>TAG CODE - 10/43/37</u>			<u>RELEASE SITE - Sawtooth Hatchery</u>						<u>NUMBER RELEASED - 20,318</u>						
River	Section	No. Tags	<u>September</u>		No. Tags	<u>October</u>		No. Tags	<u>November</u>		No. Tags	<u>December</u>			
			<u>Sample</u>	<u>Eat.</u>		<u>Sample</u>	<u>Est.</u>		<u>Sample</u>	<u>Eat.</u>		<u>Sample</u>	<u>Eat.</u>		
			<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		
01															
03/05															
04/06															
07															
10															
11															
12															
13					1	0.148	7								
14															
15															
16			<u>January</u>		No. Tags	<u>February</u>		No. Tags	<u>March</u>		No. Tags	<u>April</u>		<u>1993-94</u>	
17		No.	<u>Sample</u>	<u>Est.</u>		<u>Sample</u>	<u>Est.</u>		<u>Sample</u>	<u>Est.</u>		<u>Sample</u>	<u>Est.</u>	<u>No.</u>	<u>Est.</u>
			<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>	<u>Tags</u>	<u>Harv.</u>
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15														1	7
16															
17															
18								1	0.041	24				1	24
19															
20															
Total estimated harvest															31

Appendix B. Continued.

TAG CODE - 10/43/38			RELEASE SITE - Sawtooth Hatchery						NUMBER RELEASED - 19,338					
River	Section	No. Tags	September		October		No. Tags	November		No. Tags	December		1993-94	
			Sample	Est.	No.	Sample		Sample	Est.		Sample	Est.		
			Rate	Harv.	Tags	Rate	Harv.	Rate	Harv.		Rate	Harv.		
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14					1	0.088	11							
15														
16			January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94
17			Sample	Est.		Sample	Eat.		Sample	Est.		Sample	Est.	
		No.	Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15								1	0.203	5			1	5
16													1	11
17														
18														
19											1	0.080	13	1
20														
Total estimated harvest													29	

## 91

RELEASE SITE - Little Salmon R.

NUMBER RELEASED - 19,813

[illegible]



Appendix B. Continued.

TAG CODE - 10/43140

RELEASE SITE - Little Salmon R.

NUMBER RELEASED - 18,877

River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December		No. Tags	No. Tags	No. Tags	
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.				Sample Rate
01																	
03/05																	
04/06																	
07																	
10																	
11																	
12																	
13																	
14																	
15																	
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94		No. Tags	No. Tags
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	Sample Rate	Est. Harv.		
01																	
03/05																	
04/06																	
07																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20												2	0.204	10		2	10
Total estimated harvest																	10

Appendix B. Continued.

TAG CODE - 10/44/01

RELEASE SITE - Pahsimeroi R.

NUMBER RELEASED - 21,557

			September		October			November			December				
			No.	Sample Eat.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.			
River	Section	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.		
01									0.168						
03/05									0.262						
04/06															
07															
10															
11															
12								1		6					
13															
14								1		4					
15															
16															
			January		February			March			April			1993-94	
River	Section	Tags	No.	Sample Eat.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Sample Est.	No.	Est.	
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14													1	6	
15								2	0.203	10			2	10	
16													1	4	
17															
18															
19															
20															
Total estimated harvest														20	

Appendix B. Continued.

TAG CODE - 10/44/02

RELEASE SITE - Pahsimeroi R.

NUMBER RELEASED - 21,533

River	Section	Tags	September		No.	October		No.	November		No.	December			
			Sample	Eat.		Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.		
01															
03/05															
04/06															
07															
10															
11															
12															
13					1	0.148	7								
14															
15															
			January		No.	February		No.	March		No.	April		1993-94	
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No.	Est.
		No.	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Harv.	Tags
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15								1	0.203	5				2	12
16															
17															
18															
19															
20															
Total estimated harvest															12

Appendix B. Continued.

TAG CODE - 10/44/04			RELEASE SITE - Pahsimeroi R.						NUMBER RELEASED - 20,624						
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample Est.	Harv.		Sample Est.	Harv.		Sample Est.	Harv.		Sample Est.	Harv.		
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
		No.	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample Est.	Harv.		Sample Est.	Harv.		Sample Est.	Harv.		Sample Est.	Harv.	No.	Est.
01			Rate			Rate			Rate			Rate		Tags	Marv.
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15											1	0.066	15	1	15
16															
17															
18															
19															
20															
Total estimated harvest															15

Appendix B. Continued.

TAG CODE - 10/44/05

RELEASE SITE - Pahsimeroi R.

NUMBER RELEASED - 20,883

River Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
		Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
		Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14				1	0.148	7								
15														
16														
17														
	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
		Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No. Tags	Est. Harv.
		Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15										1	0.066	15	2	22
16														
17							1	0.066	15				1	15
18														
19														
20														
Total estimated harvest														37

Appendix B. Continued.

TAG CODE - 10/44/06			RELEASE SITE - Pahsimeroi R.						NUMBER RELEASED - 20,952						
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample	Eat.		Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01															
03/05															
04/06															
07															
10															
11					2	0.581	3								
12															
13															
14					1	0.148	7								
15															
16															
17															
		No.	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample	Eat.		Sample	Eat.		Sample	Eat.		Sample	Est.	No. Tags	Est.
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01															
03/05															
04/06															
07															
10															
11															
12														2	3
13															
14															
15								1	0.203	5				2	12
16															
17															
18															
19															
20															
Total estimated harvest															15

Appendix B. Continued.

TAG CODE - 10/44/15				RELEASE SITE - Little Salmon R.						NUMBER RELEASED - 20,991					
River	Section	No. Taps	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample Rate	Est. Harv.		Sample Rate	Eat. Harv.		Sample Rate	Eat. Harv.		Sample Rate	Est. Harv.		
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20											1	0.204	5	1	5
Total estimated harvest															5

Appendix B. Continued.

TAG CODE - 10/44/16

RELEASE SITE - Little Salmon R.

NUMBER RELEASED - 22,123

River Section	Taps	No.	September		No.	October		No.	November		No.	December			
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
River Section	Tags	No.	January		No.	February		No.	March		No.	April		1993-94	
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No.	Eat.
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20											1	0.204	5	1	5
Total estimated harvest															5



Appendix B. Continued.

TAG CODE - 10/44/17

RELEASE SITE - Little Salmon R.

NUMBER RELEASED - 21,504

River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.		Sample Rate	Est. Harv.	No. Tags	Est. Harv.
01															
03/05															
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20								1	0.316	3	1	0.204	5	2	8
Total estimated harvest															8

Appendix B. Continued.

TAG CODE - 10/44/20			RELEASE SITE - East Fork Salmon R.						NUMBER RELEASED - 20,621					
River Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December		1993-94	
		Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
		Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16		January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
17		Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No.	Est.
	No.	Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	Harv.	Harv.
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15							1	0.203	5				1	5
16							1	0.066	15				1	15
17														
18														
19														
20														
Total estimated harvest													20	

Appendix B. Continued.

TAG CODE - 10/44/21			RELEASE SITE - Sawtooth Hatchery						NUMBER RELEASED - 18,031					
River	Section	No. Taps	September		No. Tags	October		No. Taps	November		No. Taps	December		
			Sample	Est.		Sample	Eat.		Sample	Est.		Sample	Est.	
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
River	Section	No. Taps	January		No. Tags	February		No. Tags	March		No. Taps	April		1993-94
			Sample	Est.		Sample	Eat.		Sample	Eat.		Sample	Est.	
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	Tags Harv.
01														
03/05														
04/06														
07														
10														
11					1	0.039	26						1	26
12														
13														
14														
15														
16														
17														
18														
19														
20														
		Total estimated harvest												26

Appendix B. Continued.

TAG CODE - 10/44/23

RELEASE SITE - Sawtooth Hatchery

NUMBER RELEASED - 19,558

		<u>September</u>			<u>October</u>			<u>November</u>			<u>December</u>			
		No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	
River	Section	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14					1	0.242	4							
15														
16														
17														
		No.	<u>January</u>		No.	<u>February</u>		No.	<u>March</u>		No.	<u>April</u>		<u>1993-94</u>
River	Section	Tags	Sample	Est.	Tags	Sample	Est.	Tags	Sample	Est.	Tags	Sample	Est.	No. Est.
01			Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags Harv.
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														1 4
15														
16														
17														
18														
19														
20														
Total estimated harvest														4

Appendix B. Continued.

TAG CODE - 23/24/49			RELEASE SITE - Columbia River @ RM 141									NUMBER RELEASED - 9,118				
River	Section	Tags	September			October			November			December				
			No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.			
01																
03/05																
04/06																
07																
10																
11																
12																
13																
14																
15																
16																
			January			February			March			April			1993-94	
			No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Est.	No.	Est.
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		Harv.	Harv.
01																
03/05																
04/06																
07																
10																
11																
12									1	0.118	8			1		8
13																
14																
15																
16																
17																
18																
19																
20																
Total estimated harvest																8

104

Appendix B. Continued.

TAG CODE - 63/14/44				RELEASE SITE - Tucannon R.						NUMBER RELEASED - 19,767					
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01															
03/05		1	0.033	30	1	0.058	17	1	0.048	21					
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No. Tags	Est. Harv.
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01														1	21
03/05														2	47
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
Total estimated harvest														68	

Appendix B. Continued.

TAG CODE - 63/14/47				RELEASE SITE - Tucannon R.						NUMBER RELEASED - 19,860					
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01															
03/05		1	0.033	30	1	0.064	16								
04/06					2	0.058	34								
07															
10															
11															
12															
13															
14															
15															
16															
17															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No. Tags	Est.
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01														1	16
03/05														3	64
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
Total estimated harvest															80

Appendix B. Continued.

TAG CODE - 63/14/49

RELEASE SITE - Curl Lake (Tucannon R.)

NUMBER RELEASED - 19,756

			<u>September</u>			<u>October</u>			<u>November</u>			<u>December</u>		
			<u>No. Sample Est.</u>		<u>No. Tags</u>	<u>No. Sample Est.</u>		<u>No. Tags</u>	<u>No. Sample Est.</u>		<u>No. Tags</u>	<u>No. Sample Est.</u>		<u>No. Tags</u>
<u>River</u>	<u>Section</u>	<u>Taps</u>	<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>	
01					2	0.064	31							
03/05					1	0.058	17							
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
			<u>January</u>		<u>No. Tags</u>	<u>February</u>		<u>No. Tags</u>	<u>March</u>		<u>No. Tags</u>	<u>April</u>		<u>No. Tags</u>
<u>River</u>	<u>Section</u>	<u>Taps</u>	<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>	
01														
03/05														
04/06														
07														
10														
11														
12														
13														
14														
15														
16														
17														
18														
19														
20														

Total estimated harvest



Appendix B. Continued.

TAG CODE - 63/14/50

RELEASE SITE - Curl Lake (Tucannon R.)

NUMBER RELEASED - 19,984

	River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
				Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
				Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
03/05	01		1	0.033	30				1	0.048	21	1	0.069	14		
	04/06															
	07															
	10															
	11															
	12															
	13															
	14															
	15															
	River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
				Sample	Est.	Taps	Sample	Est.	Tags	Sample	Est.	Tags	Sample	Est.	No.	Est.
				Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	Tags	Harv.
	01														1	21
03/05															2	44
04/06																
07																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																

Total estimated harvest

65

Appendix B. Continued.

TAG CODE - 63/14/52			RELEASE SITE - Curl Lake (Tucannon R.)									NUMBER RELEASED - 19,791			
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
	01														
	03/05				2	0.058	34								
	04/06														
	07														
	10							1	0.045	22					
	11														
	12														
	13														
	14														
	15														
	16														
	17														
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No. Tags	Est. Harv.
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
	01														
	03/05													2	34
	04/06														
	07														
	10													1	22
	11														
	12														
	13														
	14														
	15														
	16														
	17														
	18														
	19														
	20														
Total estimated harvest														56	

Appendix B. Continued.

TAG CODE - 63/14/56			RELEASE SITE - Touchet R. @ Dayton									NUMBER RELEASED - 19,925			
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01															
03/05		1	0.033	30											
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample	Est.		Sample	Est.		Sample	Est.		Sample	Est.	No.	Est.
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.	Tags	Harv.
01															
03/05														1	30
04/06															
07															
10														1	22
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
Total estimated harvest															30

Appendix B. Continued.

TAG CODE - 63/39/12

RELEASE SITE - Curl Lake (Tucannon R.)

NUMBER RELEASED - 19,692

			<u>September</u>			<u>October</u>			<u>November</u>			<u>December</u>		
			<u>Sample Eat.</u>		<u>No. Tags</u>	<u>Sample Eat.</u>		<u>No. Tags</u>	<u>Sample Est.</u>		<u>No. Tags</u>	<u>Sample Est.</u>		<u>No. Tags</u>
<u>River</u>	<u>Section</u>	<u>Tags</u>	<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>	
	01				1				0.048	21				
	03/05													
	04/06													
	07													
	10													
	11													
	12													
	13													
	14													
	15													
	16													
			<u>January</u>		<u>No. Tags</u>	<u>February</u>		<u>No. Tags</u>	<u>March</u>		<u>No. Tags</u>	<u>April</u>		<u>1993-94</u>
<u>River</u>	<u>Section</u>	<u>Tags</u>	<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>		<u>Rate</u>	<u>Harv.</u>	
	01												1	21
	03/05													
	04/06													
	07													
	10													
	11													
	12													
	13													
	14													
	15													
	16													
	17													
	18													
	19													
	20													

Total estimated harvest

Appendix B. Continued.

TAG CODE - 63/40/61				RELEASE SITE - Touchet R.						NUMBER RELEASED - 19,791					
River	Section	No. Tags	September		No. Tags	October		No. Tags	November		No. Tags	December			
			Sample	Est.		Sample	Est.		Sample	Eat.		Sample	Est.		
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01															
03/05					1	0.058	17								
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
River	Section	No. Tags	January		No. Tags	February		No. Tags	March		No. Tags	April		1993-94	
			Sample	Est.		Sample	Est.		Sample	Eat.		Sample	Eat.	No. Tags	Est. Harv.
			Rate	Harv.		Rate	Harv.		Rate	Harv.		Rate	Harv.		
01															
03/05														1	17
04/06															
07															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
Total estimated harvest															17

Appendix B. Continued.

TAG CODE - 63/42/63

RELEASE SITE - Curl Lake (Tucannon R.)

NUMBER RELEASED - 28,946

		September			October			November			December			
		No.	Sample	Eat.	No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Eat.	
		Tags	Rate	Harv.	Taos	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	
03/05	01	1	0.033	30										
	04/06													
	07													
	10													
	11													
	12													
	13													
	14													
	15													
	16													
		No.	Sample	Est.	No.	Sample	Est.	No.	Sample	Eat.	No.	Sample	Est.	1993-94
		Taos	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Tags	Rate	Harv.	Taal Harv.
	01													
	03/05												1	30
	04/06													
	07													
	10													
	11													
	12													
	13													
	14													
	15													
	16													
	17													
	18													
	19													
	20													
Total estimated harvest														30

Appendix C. Steelhead groups returning to the Salmon River, 1993-94.

Strain Age No. of Fish			Release Site	Hatchery Rearing	Marks
A	I	53,463	Sawtooth Hatchery	HNFH <sup>a</sup>	CWT 10/15/30
A	I	45,646	Sawtooth Hatchery	HNFH	CWT 10/40/07
A	I	18,031	Sawtooth Hatchery	HNFH	CWT 10/44/21
A	I	18,518	Sawtooth Hatchery	HNFH	CWT 10/44/22
A	I	19,558	Sawtooth Hatchery	HNFH	CWT 10/44/23
A	I	1,495	Sawtooth Hatchery	HNFH	PIT
A	I	470,072	Sawtooth Hatchery	HNFH	None
A	I	117,300	Sawtooth Hatchery	MVSH <sup>b</sup>	None
A	I	223,406	Pahsimeroi R.	HNFH	None
A	I	21,557	Pahsimeroi R.	NSPR <sup>c</sup>	CWT 10/44/01
A	I	21,533	Pahsimeroi R.	NSPR	CWT 10/44/02
A	I	20,657	Pahsimeroi R.	NSPR	CWT 10/44/03
A	I	20,624	Pahsimeroi R.	NSPR	CWT 10/44/04
A	I	20,883	Pahsimeroi R.	NSPR	CWT 10/44/05
A	I	20,952	Pahsimeroi R.	NSPR	CWT 10/44/06
A	I	600	Pahsimeroi R.	NSPR	PIT
A	I	376,374	Pahsimeroi R.	NSPR	None
A	I	282,300	Hammer Cr.	NSPR	None
A	I	20,991	Little Salmon R.	MVSH	CWT 10/44/15
A	I	22,123	Little Salmon R.	MVSH	CWT 10/44/16
A	I	21,504	Little Salmon R.	MVSH	CWT 10/44/17
A	I	100	Little Salmon R.	MVSH	CWT 10/44/15 + PIT
A	I	100	Little Salmon R.	MVSH	CWT 10/44/16
A	I	100	Little Salmon R.	MVSH	CWT 10/44/17 + PIT
A	I	936,982	Little Salmon R.	MVSH	None
Total		2,754,869			

Appendix C. Continued.

Strain	Ace	No. of Fish	Release Site	Hatchery Rearing	Marks
A	II	21,050	Sawtooth Hatchery	HNFH	CWT 10/43/33
A	II	20,129	Sawtooth Hatchery	HNFH	CWT 10/43/34
A	II	12,066	Sawtooth Hatchery	HNFH	CWT 10/43/35
A	II	21,775	Sawtooth Hatchery	HNFH	CWT 10/43/36
A	II	20,318	Sawtooth Hatchery	HNFH	CWT 10/43/37
A	II	19,338	Sawtooth Hatchery	HNFH	CWT 10/43/38
A	II	985	Sawtooth Hatchery	HNFH	PIT
A	II	864,138	Sawtooth Hatchery	HNFH	None
A	II	304,907	Sawtooth Hatchery	HNFH	None
A	II	364,700	Sawtooth Hatchery	MVSH	None
A	II	135,100	Pahsimeroi R.	MVSH	None
A	II	20,550	Pahsimeroi R.	NSPR`	CWT 10/43/23
A	II	22,328	Pahsimeroi R.	NSPR	CWT 10/43/27
A	II	22,395	Pahsimeroi R.	NSPR	CWT 10/43/28
A	II	500	Pahsimeroi R.	NSPR	PIT
A	II	409,227	Pahsimeroi R.	NSPR	None
A	II	23,280	Salmon R. @ Ellis Br.	NSPR	CWT 10/43/29
A	II	22,388	Salmon R. @ Ellis Br.	NSPR	CWT 10/43/30
A	II	21,826	Salmon R. @ Ellis Br.	NSPR	CWT 10/43/31
A	II	106,906	Salmon R. @ Ellis Br.	NSPR	None
A	II	97,800	Salmon R. @ Shoup Br.	MVSH	None
A	II	48,200	Salmon R. @ Shoup Bridge	NSPR	None
A	II	21,605	Salmon R. @ North Fork	NSPR	CWT 10/43/24
A	II	23,782	Salmon R. @ North Fork	NSPR	CWT 10/43/25
A	II	22,244	Salmon R. @ North Fork	NSPR	CWT 10/43/26
A	II	500	Salmon R. @ North Fork	NSPR	PIT
A	II	90,269	Salmon R. @ North Fork	NSPR	None
A	II	21,809	Little Salmon R.	MVSH	CWT 10/43/17



Appendix C. Continued.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
A	II	22,704	Little Salmon R.	MVSH	CWT 10/43/18
A	II	21,484	Little Salmon R.	MVSH	CWT 10/43/19
A	II	1,600	Little Salmon R.	MVSH	PIT
A	II	242,703	Little Salmon R.	MVSH	None
A	II	186,300	Hammer Cr.	MVSH	None
Total		3,234,906			
B	I	302,335	East Fork Salmon R.	HNFH	None
B	I	21,671	East Fork Salmon R.	MVSH	CWT 10/44/18
B	I	21,468	East Fork Salmon R.	MVSH	CWT 10/44/19
B	I	20,721	East Fork Salmon R.	MVSH	CWT 10/44/20
B	I	100	East Fork Salmon R.	MVSH	CWT 10/44/18 + PIT
B	I	100	East Fork Salmon R.	MVSH	CWT 10/44/19 + PIT
B	I	100	East Fork Salmon R.	MVSH	CWT 10/44/20 + PIT
B	I	967,897	East Fork Salmon R.	MVSH	None
B	I	18,386	Little Salmon R.	HNFH	CWT 10/44/07
B	I	19,450	Little Salmon R.	HNFH	CWT 10/44/08
B	I	17,390	Little Salmon R.	HNFH	CWT 10/44/09
B	I	245,308	Little Salmon R.	HNFH	None
Total		1,643,926			
B	II	20,498	East Fork Salmon R.	MVSH	CWT 10/43/14
B	II	21,017	East Fork Salmon R.	MVSH	CWT 10/43/15
B	II	20,312	East Fork Salmon R.	MVSH	CWT 10/43/16
B	II	750	East Fork Salmon R.	MVSH	PIT
B	II	22,525	East Fork Salmon R.	MVSH	CWT 10/43/20
B	II	22,483	East Fork Salmon R.	MVSH	CWT 10/43/21
B	II	21,375	East Fork Salmon R.	MVSH	CWT 10/43/22
B	II	750	East Fork Salmon R.	MVSH	PIT

## Appendix C.

## Continued.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
B	II	838,090	East Fork Salmon R.	MVSH	None
B	II	540,733	East Fork Salmon R.	HNFH	None
B	II	19,831	Little Salmon R.	HNFH	CWT 10/43/32
B	II	19,813	Little Salmon R.	HNFH	CWT 10/43/39
B	II	18,877	Little Salmon R.	HNFH	CWT 10/43/40
B	II	501	Little Salmon R.	HNFH	PIT
B	II	398,078	Little Salmon R.	HNFH	None
B	II	120,323	Little Salmon R.	HNFH	None
Total		2,085,956			
B	III	64,150	East Fork Salmon R.	HNFH	None
B	III	40,905	East Fork Salmon R.	MVSH	CWT 10/40/58
B	III	14,964	East Fork Salmon R.	MVSH	CWT 10/42/33
B	III	15,157	East Fork Salmon R.	MVSH	CWT 10/42/34
B	III	14,642	East Fork Salmon R.	MVSH	CWT 10/42/35
B	III	15,474	East Fork Salmon R.	MVSH	CWT 10/42/36
B	III	15,971	East Fork Salmon R.	MVSH	CWT 10/42/37
B	III	14,958	East Fork Salmon R.	MVSH	CWT 10/42/38
B	III	792,129	East Fork Salmon R.	MVSH	None
B	III	14,841	Little Salmon R.	HNFH	CWT 10/42/30
B	III	14,065	Little Salmon R.	HNFH	CWT 10/42/31
B	III	13,416	Little Salmon R.	HNFH	CWT 10/42/32
B	III	351,030	Little Salmon R.	HNFH	None
B	III	162,700	Slate Cr.	MVSH	None
Total		1,544,402			

<sup>a</sup> HNFH = Hagerman National Fish Hatchery. <sup>b</sup>  
 MVSH = Magic Valley Steelhead Hatchery.  
<sup>c</sup> NSPR = Niagara Springs Fish Hatchery.

Appendix C. Continued.

Strain Age		No. of Fish	Release Site	Hatchery Rearing	Marks
B	III	20,279	Clearwater R.	DNFH	CWT 05/20/46
B	III	374,040	Clearwater R. @ Clear Cr.	DNFH	None
B	III	214,633	Crooked R.	DNFH	None
B	III	199,700	Eldorado Cr. (Lolo Cr.)	DNFH	None
B	III	21,290	North Fork Clearwater R.	DNFH	CWT 05/20/47
B	III	20,888	North Fork Clearwater R.	DNFH	CWT 05/20/48
B	III	21,387	North Fork Clearwater R.	DNFH	CWT 05/20/49
B	III	210,836	South Fork Clearwater R. @ Newsome Creek	DNFH	None
B	III	287,830	South Fork Clearwater R.	DNFH	None
Total		2,663,550			

<sup>a</sup> DNFH = Dworshak National Fish Hatchery.

Appendix D. Steelhead groups returning to the Clearwater River, 1993-94.

Strain	Age	No. of Fish	Release Site	Hatchery Rearing	Marks
B	I	20,645	Clearwater R.	DNFH	CWT 05/24/19
B	I	20,705	Clearwater R.	DNFH	CWT 05/24/20
B	I	20,709	Clearwater R.	DNFH	CWT 05/24/23
B	I	20,039	Clearwater R.	DNFH	CWT 05/26/46
B	I	1,141,397	Clearwater R.	DNFH	None
B	I	349,210	Clearwater R.@ Clear Cr.	DNFH	None
B	I	19,909	South Fork Clearwater R.	DNFH	CWT 05/24/21
B	I	20,499	South Fork Clearwater R.	DNFH	CWT 05/24/22
B	I	695,333	South Fork Clearwater R.	DNFH	None
Total		2,308,446			
B	II	210,874	American R.	DNFH	None
B	II	19,773	Clearwater R.	DNFH	CWT 05/24/24
B	II	20,320	Clearwater R.	DNFH	CWT 05/24/25
B	II	19,858	Clearwater R.	DNFH	CWT 05/24/26
B	II	19,515	Clearwater R.	DNFH	CWT 05/24/27
B	II	20,547	Clearwater R.	DNFH	CWT 05/24/28
B	II	20,499	Clearwater R.	DNFH	CWT 05/24/29
B	II	20,293	Clearwater R.	DNFH	CWT 05/24/30
B	II	1,051,698	Clearwater R.	DNFH	None
B	II	369,190	Clearwater R.@ Clear Cr.	DNFH	None
B	II	201,847	Eldorado Cr. (Lolo Cr.)	DNFH	None
B	II	213,827	Red R.	DNFH	None
B	II	467,757	South Fork Clearwater R.	DNFH	None
Total		2,655,998			
B	III	209,847	American R.	DNFH	None
B	III	1,043,007	Clearwater R.	DNFH	None
B	III	20,016	Clearwater R.	DNFH	CWT 05/20/44
B	III	19,797	Clearwater R.	DNFH	CWT 05/20/45

Appendix E. Miscellaneous coded wire tag steelhead groups that were recovered by Idaho anglers, 1993-94.

Strain	Age	No. of Fish	Release Site	Agency	Marks
A	I	9,118	Columbia R. @ RM 141	NMFS <sup>a</sup>	CWT 23/24/49
A	I	28,946	Curl Lake (Tucannon R.)	WDFW <sup>b</sup>	CWT 63/42/63
A	II	9,458	Umatilla R. @ Meacham Cr.	ODFW <sup>c</sup>	CWT 07/53/45
A	II	26,713	Wallowa R. @ Big Canyon Cr.	ODFW	CWT 07/53/53
A	II	24,751	Wallowa R. @ Big Canyon Cr.	ODFW	CWT 07/53/54
A	II	19,516	Imnaha R. @ Little Sheep Cr.	ODFW	CWT 07/53/56
A	II	25,868	Wallowa R. @ Spring Cr.	ODFW	CWT 07/53/59
A	II	28,018	Wallowa R. @ Spring Cr.	ODFW	CWT 07/53/60
A	II	28,815	Wallowa R. @ Spring Cr.	ODFW	CWT 07/54/43
A	II	19,971	Tucannon R.	WDFW	CWT 63/14/44
A	II	19,860	Tucannon R.	WDFW	CWT 63/14/47
A	II	19,756	Tucannon R.	WDFW	CWT 63/14/49
A	II	19,984	Curl Lake (Tucannon R.)	WDFW	CWT 63/14/50
A	II	19,791	Curl Lake (Tucannon R.)	WDFW	CWT 63/14/52
A	II	19,925	Touchet R. @ Dayton	WDFW	CWT 63/14/56
A	II	19,692	Touchet R.	WDFW	CWT 63/40/61
A	III <sup>d</sup>	19,692	Curl Lake (Tucannon R.)	WDFW	CWT 63/39/12

<sup>a</sup>NMFS = National Marine Fisheries Service.

<sup>b</sup>WDFW = Washington Department of Fish and Wildlife.

ODFW = Oregon Department of Fish and Wildlife.


<sup>d</sup>This fish is a hold-over from the 1990 release year.

Submitted by:

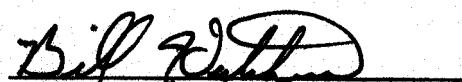
Kent Ball  
Senior Fishery Research Biologist

Approved by:

IDAHO DEPARTMENT OF FISH AND GAME



Steven M. Huffaker, Chief  
Bureau of Fisheries



Bill Hutchinson  
State Fishery Manager